THE FIRST TOURISTS ENTERING SOUTHERN CALIFORNIA.

THE MEDITERRANEAN SHORES OF AMERICA.

SOUTHERN CALIFORNIA:

ITS

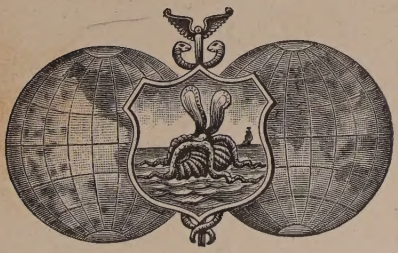
CLIMATIC, PHYSICAL, AND METEOROLOGICAL CONDITIONS.

BY

P. C. REMONDINO, M.D.
(JEFFERSON),

MEMBER OF THE AMERICAN MEDICAL ASSOCIATION, OF THE AMERICAN PUBLIC HEALTH ASSOCIATION, OF THE SAN DIEGO COUNTY MEDICAL SOCIETY, OF THE STATE BOARD OF HEALTH OF CALIFORNIA; VICE-PRESIDENT OF THE CALIFORNIA STATE MEDICAL SOCIETY AND OF THE SOUTHERN CALIFORNIA MEDICAL SOCIETY, ETC., ETC.

FULLY ILLUSTRATED.



PHILADELPHIA AND LONDON:
THE F. A. DAVIS CO., PUBLISHERS,
1892.

WILLIAM MADISON RANDALL LIBRARY UNC AT WILMINGTON

Entered according to Act of Congress, in the year 1892, by
THE F. A. DAVIS COMPANY,
In the Office of the Librarian of Congress, at Washington, D. C., U. S. A.

Philadelphia, Pa., U. S. A.:
The Medical Bulletin Printing House,
1231 Filbert Street.

.R4

PREFACE.

CLIMATE is a wonderful as well as a powerful factor—be it in religion, arts, sciences, or civilization. It makes morality and creeds; the wild and weird mysteries of Eulesis, the festivals of the Roman Flora, or the orgies that accompanied the feasts and worship of Dionysius or Bacchus, never could have taken place except between certain degrees of latitude. Climate determines the diet, occupation, the diseases of which we shall suffer and die, as well as the average length of our existence; it determines our temper, faculties, and facilities for acquiring knowledge and the arts. Climate is, in fact, as observed by Montesquieu, the most powerful of all empires. We need but observe the effects of the American climate on Europeans, and of the European climate on the Americans, to become convinced of the truth of this assertion.

Southern California climatology is quite a study; many of its meteorological results are even real puzzles, —puzzles met with nowhere else. It has many oddities; for instance, one of the greatest peculiarities or oddities of this climate consists in the relative conditions existing between the degrees of temperature and the degrees of atmospheric humidity. It is this atmospheric condition that puzzles all new-comers, and that is incomprehensible to the average observer of meteorological conditions and their results. As a medical visitor once observed to the writer, "Nature has evidently fitted Southern California meteorology with such a nice self-adjusting regulator that climatic accidents to health

cannot occur to you. With a rise in the thermometer you have a double discounting diminution in your humidity, and with a fall of your thermometer you have an equal double discount of an increase in your humidity, which at once produces equability. I do not know of a region on the wide globe that is so favored."

This condition is its actual state, and the peculiar adjustment between temperature and relative humidity accounts for the fact that our people—delicate ladies, children, or invalids—walk the streets without even the protection of a sun-shade, in a temperature of over 100 degrees in the shade, without any discomfort, enervation, or resulting accident, as the writer observed in the streets of Los Angeles, in the first week in June of 1890, the unusual heat being then due to forest and mountain fires. It is this nice adjustment that also explains why, in different temperatures and in apparently gradually-increasing extremes of thermometric range, as it is experienced in moving inland toward the mountains and in departing from the shore of the sea, that the same degree of health, well-being, and the meteorology of this section is one full of interest. It gives to it the coolest summers and warmest winters in the United States, with an absence necessarily of either spring or fall weather. Space will not permit a fuller description, but, in conclusion, it may be said that it is to this equability and the peculiarities described that California, especially the "Italy of America" of Charles Dudley Warner, enjoys the possession of a climate that is the best, either for production, comfort, health, or long life.

Although on the shores of a vast ocean, no sea-shore is more free from high or boisterous winds or storms. In evidence of this it may be stated that at the Signal-Service Station in this city the cautionary storm signals,

consisting of the various colored flags and lanterns that are generally used at sea-ports in the rest of the United States, were returned to the Washington office after having laid here for eight years without ever having been once used. The region has not one lightning-rod to the writer's knowledge; and neither linen dusters, fur coats, sun-shades, or any other stormy weather, heat or cold preventives are here necessary. The enchanted isles of the dreams of our free and careless youthful imagination have here their actual earthly reality; the paradise, as far as climate can make it, is in this favored region. Here disease and death may be kept at bay and life enjoyed to the end of the term of man's natural existence.

Again, persons are in the habit of speaking of the Southern California climate as they would of that of one of the Sandwich Islands, or of that of some other constricted locality, when, in fact, it would be as relational to speak of the climate of the north of Italy as a whole, and give to the Valley of Aosta, that of Susa, or to the hills of the Apennines a like climate to that of the Riviera or of Venice, and where Genoa—although on the same shores with Mentone—possesses an altogether inferior medical climate.

Southern California has fully as varied a climatology as that of the north of Italy; it may even be said to possess more extremes of condition; but, with these extremes, it enjoys the anomalous condition of having these extremes alike favorable to health and long life—just the reverse of the Italian extremes.

Southern California has six distinct classes of climates, all having a therapeutic value and application, as follows:—

1. A purely insular climate.

2. The peninsular climate.

3. The coast climate.

4. The foot-hill and valley climate, 200 to 2500 feet elevation.

5. The mountain climate, 2500 to 9000 feet elevation.

6. The desert climate, from 360 feet below sea-level to 2500 feet elevation.

Of these the three first are essentially marine climates, the fourth is partly marine in its effects and influence, and the fifth and sixth classes are land climates. None of the six can be called moist or humid, as the same dryness and aseptic condition of the atmosphere that is found on the coast or inland prevails on the neighboring islands.

Invalids with the same disease and temperament do not always do well alike in the same locality, by any means, and a variety of climates is to them a necessity. This region not only has a great variety of climates, but a variety that is susceptible of further subdivision. The San Diego Bay region alone furnishes no less than four distinct localities, each with its characteristics, besides the difference furnished by elevation, where the range between day and night is still less than on the lower lands.

California climatology is not a new discovery. Blodget discovered and described its main general features long ago; as far back as in 1857, in his great work on the "Climatology of the United States," in speaking of the Pacific-coast climates, he says, at page 200:—

"The elastic atmosphere and bracing effect of the Pacific climates constitute a striking difference from those of the Eastern States. Whether due to the absence of humidity alone is not clear; but, whatever the cause, it is a notable practical feature. The interior

valleys, where the heat is excessive, are similar to the cold coast also, and there is no climate which is not the reverse of enervating in its whole extent. If, as before stated, the moisture of the sea-air on the Pacific is relative rather than positive, or is developed by the contact of great extremes of temperature, the whole may be taken as more dry than it would at first appear to be, and its uniformly bracing character will not be difficult to account for. As it is, all residents concur in pronouncing it more favorable to physical and mental activity than any they have known, from whatever quarter they come. The heat of the South, where the peculiarities of Spain are reproduced, is never enervating, and that of the excessively hot valley of the interior is singularly endurable."

California meteorology is something that will interest the reader, whether in search of a more genial home or in search of lost health, or, even if only as a matter of new information about one's own country. The data and tables given have all been compiled from the U. S. Signal-Service Office, or from reliable observations made with perfected and tested instruments. The data will be sufficient whereby to form an intelligent opinion regarding the climate.

The book is necessarily an incomplete work,—being only intended as a short guide or abridged hand-book. Of this the author is well aware; but he has undertaken, in as condensed a form as possible, to give to the seeker after a climate for health such information as will be of value, besides giving to the reader some general ideas on climatology in relation to health and disease not often found in local climatic guide-books. He has also endeavored to explain that much more depends on the care and prudence of a patient than is generally believed, and that too much should not be left to climatic effects.

In closing, the author acknowledges kindly assistance and favors in material for illustrations from Harper & Brothers, *The Cosmopolitan*, *The California Illustrated Magazine;* Mrs. Madge Morris Wagner, of the *Golden Era;* Mr. Barry, of the *Richfield News;* Mrs. Turner, of the "Elite Studio" of San Diego, and from Mr. Willard, of the Los Angeles Chamber of Commerce. Although the book is not a descriptive work, the illustrations will assist the reader to a better knowledge of the region to which it is devoted. And last, but not least, the writer must acknowledge his thanks to the publishers, The F. A. Davis Company, for the neatness and dispatch with which the work has been issued.

P. C. Remondino, M.D.

San Diego, Cal., 1892.

CONTENTS.

PAGE

PREFACE, ... iii

CONTENTS, ... ix

LIST OF ILLUSTRATIONS, ... xi

BIBLIOGRAPHY, ... xiii

INTRODUCTION, ... 1

Meteorological Conditions and Disease, . . . 6

Sea-Air and Marine Climates, ... 7

Ocean-Moisture and Soil-Moisture, ... 11

Rain and Rainy Weather on Coasts, ... 12

Misapplied Terms as to Moist Climates, . . . 14

Extreme Dryness of the Air, ... 14

Consumption and Temperature, ... 17

Geographical Limits of Consumption, . . . 17

The Relative Merits of Altitudes, ... 19

Why Phthisis is more Prevalent on Lower Elevations, 20

Are Altitudes Exempt from Consumption? . . 20

Ventilation and not Altitude the Factor in Exempting, 22

Equability of Temperature an Important Factor, . 22

Different Effects of Sunshine and Shade, . . . 25

Sea and Mountain Climate on Infant Mortality, . . 26

Marine Climate and Adult Life, ... 30

SOUTHERN CALIFORNIA: ITS PHYSICAL, METEOROLOGICAL, AND CLIMATOLOGICAL CONDITIONS, ... 34

Area and Extent, ... 34

Mountain Chains, ... 36

Valleys, ... 37

Soil, ... 38

Soil Heat and Dryness, ... 40

Rivers, ... 41

Ocean and Channel Currents, ... 42

PAGE

Tides, ... 45
Islands, ... 47
Fauna, ... 48
Flora, ... 50
Temperature, ... 51
Temperature of the Sea-Water, ... 70
Temperature of the Valleys, ... 73
Temperature of the Mountains, ... 78
Desert Temperature, ... 80
Summary of the Subject of Temperature, . . . 84
Winds, ... 91
Rain-Fall and Rainy Seasons, ... 94
Relation of Rain-Fall to Health and Disease, . . 99
Atmospheric Humidity, ... 101
Barometer, ... 106
Atmospheric Electricity, ... 108
Diaphanous Conditions of the Atmosphere, . . 109
Sunshine, ... 111
Thunder and Lightning, ... 112
Ozone, ... 113
Competent Observers' Views of the Climate, . . 113
Effects of the Climate, ... 118
Vital Statistics, ... 122
General Statistics and Advice, ... 126

Altitudes and Southern California Resorts, . . 129
Are Altitudes Necessary to the Consumptive? . . 140
Examples Furnished by the Anahuac Plateau, . . 142
Aërial-Voyage Meteorology Not Applicable to Terra Firma, ... 143
California Elevations Do Not Differ Medically from the Lowlands, ... 144
Remarkable Cases of Chest Wounds and Recoveries, 145
Hereditary Consumption and Climate, . . . 153
Pneumonia and our Climate, ... 156

LIST OF ILLUSTRATIONS.

PAGE

Frontispiece,

Beach Scene at Santa Catalina Island, 5

Hotel Coronado from the Northeast, 8

Magnolia Avenue, Riverside, 13

Beach and Hotel at Redondo, Redondo Beach, 18

The Raymond, Pasadena, 23

Arrowhead Hot Springs and Hotel, 29

Palm Valley, San Diego, 33

San Luis Rey Mission, 36

San Luis Rey Mission, General View from Northwest, 39

Public Library, Raymond Avenue, Pasadena, 42

Southeast View of Hotel del Coronado, 46

Caves at La Jolla, 49

Live Oak, Orange Grove Avenue, Pasadena, 50

Old San Diego Mission, Founded 1769, 53

Ostrich Farm, Pasadena, 57

Grand Opera-House, Raymond Avenue, Pasadena, 59

Hot Mineral-Water Baths at Elsinore, San Diego County, 61

Bathing in the Surf at Coronado Beach in January, 66

San Gabriel Mission, 71

In and Around Los Angeles, 75

Eaton Canyon. Proposed Electric Road to the Summit of Mount Wilson, near Pasadena, 79

The Beach Line of an Ancient Lake in the Desert, 81

A Mirage in the Desert, 83

Scenes at and near Yuma, 85

Children in Open-Air School, 89

Coronado Boat-House and Hot Sea-Water Baths, Coronado Beach, 92

Live Oaks on Julian Mountains, 97

PAGE

Headquarters of Commodore Stockton in San Diego, at its Capture from Mexico, ... 100

Part of Old Mission San Juan, ... 105

Ancient Cloister-Gallery, San Juan Mission, ... 107

View of Hotel del Coronado from the Boat-House Observatory, . 110

View of San Diego Bay. Coronado Ferry in Right Margin, . . . 114

Under the Cactus at the Old Misson, San Diego, ... 117

Mexican Indian, 140 Years Old, ... 121

San Diego Bay from Coronado Beach, ... 125

Ascending Mount Wilson by the Trail, North of Pasadena, . . 128

Boy and Ferns, ... 131

The Loop, ... 133

Tall Trees, ... 137

Sweetwater Dam and Lake, ... 141

A January Race on a Southern California Sea-Beach, . . . 146

Cable-Road Pavilion of San Diego Cable-Road Company, . . 151

Old Man, 110 Years of Age, ... 155

Hotel Arcadia, Santa Monica, California, ... 160

BIBLIOGRAPHY.

BANCROFT. Native Races of the Pacific Coast. Volume I. 1883.

BEARD. American Nervousness. 1881.

BELL, A. N. Climatology and Mineral Waters of the United States. 1885.

BELL, A. N. Medical News. Philadelphia. August 3, 1889.

BELL, JOHN. Regimen and Longevity. 1842.

BENNET, J. H. Winter and Spring on the Mediterranean. 1875.

BENNET, J. H. Pulmonary Consumption. 1879.

BLODGET. Climatology of the United States. 1857.

BUCKS. Hygiene and Public Health. 1879.

CONI. Causes of Infant Mortality. Buenos Ayres. 1886.

DE PIETRA SANTA. Climates of the South of France. Paris. 1874.

DENNISON. Rocky Mountain Health Resorts. 1880.

DISTURNELL. Influence of Climate. 1867.

EMORY. Reports and Notes of Travel. 1849.

FONSSANGRIVES. Naval Hygiene. Paris. 1856.

FONSSANGRIVES. Pulmonary Phthisis. Paris. 1866.

GIGOT-SUARD, L. Climate in its Hygienic and Therapeutic Relations. Paris, 1862.

GUNN. Picturesque San Diego. 1888.

HITTELL. Resources of California. 1869.

LANCEREAUX. Geographical Distribution of Pulmonary Phthisis. Paris. 1877.

LINDLEY. Extremes of Altitudes in California. Los Angeles. 1888.

LOMBARD. Geographical Distribution of Diseases. Paris. 1880.

MADDEN. Health Resorts of Europe and Africa. 1876.

MARTINENQ. Sea-Air and its Influence. Paris. 1865.

MAURY. Physical Geography. 1887.

MILLARD. Climate and Statistics of Consumption. 1861.

Nordhoff. Peninsular California. 1888.

Parkes. Manual of Hygiene. 1883.

Richardson. Preventive Medicine. 1884.

Van Dyke. Southern California. 1886.

Warner, Charles Dudley. Our Italy. 1891.

Widney and Lindley. California of the South. 1888.

Zagiell. Climate of Egypt. Paris. 1876.

Ziemssen. Hand-Book of General Therapeutics. Vol. IV. 1885.

California Annual Meteorological Review for the Year 1888.

California State Board of Health. Ninth Biennial Report. 1886.

California State Board of Health Reports. 1880.

Chief Signal Officer, U. S. A., Report. Washington, D. C. 1888.

Chief Signal Officer, U. S. A., Report of Rainfall. Washington, D. C. 1889.

Harper's Monthly. November, 1887.

Hygienic and Medical Reports. Navy Department. 1879.

Massachusetts State Board of Health. Fourth Annual Report. 1873.

Popular Science Monthly. November, 1879.

Scribner's Magazine. April, 1888.

Southern California Practitioner. December, 1886.

United States Marine-Hospital Reports. 1879.

Bunk & Mc Petridge, Lith. Phila.

MAP OF SOUTHERN CALIFORNIA.

Green represents inhabited parts; Yellow, the Desert part. Figures denote elevations. Population, Census of 1890—204,500.

SOUTHERN CALIFORNIA;

WHAT ARE ITS CLIMATES?

INTRODUCTION.

THE preparation of this book was suggested to the writer while trying to unravel the intricate and contradictory information that is encountered in pursuing the study of medical climatology and its relations to the etiology of phthisis,—two very mixed-up subjects. As observed by Weber, every classification of climate is defective,—even more so than that of drugs. All attempts to form a classification based on either isothermal lines, altitude, humidity, barometric pressure, or any other atmospheric condition, have all alike proved abortive. After a careful survey of the whole field, we may well pause and inquire how much practical progress has the science of climatology, as a therapeutic agent, made since the days of Hippocrates, who looked upon climate as a purely local attribute, composed of three important factors,—air, water, and locality. When fifty years had elapsed after the great Hufeland had written his "Art of Prolonging Life," Erasmus Wilson undertook the task of editing a new English edition, to his surprise he found but little to add and still less to criticise,—so little progress had the science made in all those years. With all the advances that have been made in medicine and its different branches, there has certainly been no better definition of a climate that is favorable to health or conducive to long life than that

penned by Hufeland, in Jena, over a century ago. This great medical philosopher counselled a cool rather than a warm medium, placing great reliance on the character of the ground and soil: a cold soil he looked upon as detrimental; a marine air was to be preferred, on account of its greater uniformity in regard to heat, cold, and barometric pressure, "as all rapid variations are so many internal revolutions that occasion an astonishing consumption, both of the powers and of the organs." Islands and peninsulas he looked upon as the cradles of old age, and he particularly noticed the difference that existed between the longevity of different countries, which he attributed to the various degrees of variability to which they were subject. In his day the nearest approach to perfection was to be found in the islands to the northwest of Great Britain,—localities that have since been pointed out by Dickinson as the least subject to disease of any part of Great Britain, and are to-day the homes of as long-lived a race as is to be found in Europe.

Bennet cannot speak in too high praise of the healthfulness of the western highlands of Scotland; Donnelly and Wilde, in their report made to Parliament on the health and vital statistics of Ireland, stated that the proportion of diseases generally, and of those of the respiratory organs in particular, was all of two-fifths greater on the eastern than on the western side of the island; the infant mortality in Ireland, during the first year of life, is only one-half of what it is in Spain or in Switzerland, and nearly three-fourths less than what it is in Bavaria. In the Shetlands, Orkneys, and Hebrides it is even less. There is hardly a country in Europe that has so many very old people as the westerly coasts and islands of Great Britain.

The high mountain-plateaus of the Colombian and

Peruvian Andes of South America offer a like exemption from pulmonary diseases, and nearly a like tendency to longevity. The same immunities as regards disease and the same favorable conditions that are conducive to old age, both in an increased degree, are to be found on the shores of the Pacific Ocean in Southern California. It is noteworthy of remark that, wherever—as in the countries above mentioned—diseases of the respiratory organs are rare, there also will be found a minimum of renal diseases, and that, where these are wanting, longevity can be looked for in all its perfections.

It may now be asked: Have all these localities that tend to maintain such a healthy condition of the organs and body, by which man is enabled to reach such a green and enjoyable old age, a like climate? Is not a certain barometric pressure, altitude, atmospheric dryness, or a certain amount of rain-fall, number of rainy days, mists, or of winds of a certain mildness, an imperative requisite to induce that sound organic condition that will lead to a long life? The climates of the regions named offer every possible condition of climatic opposites and the region different features of physical geography. The Scotch islands lie over 60 degrees of latitude farther north than the Colombian capital: the former are nearly at sea-level, while the latter is at an elevation of 9000 feet; the western highlands of Scotland are only of medium elevation; Ireland and England have no high mountains; Southern California presents every possible elevation—from 300 feet below sea-level to nearly 14,000 feet above. So that simple elevation is evidently not a necessary factor, as, otherwise, the Valley of the Jordan and the vast steppes inhabited by the Kirghis Tartars—ranging from 100 to 1300 feet below sea-level—would hardly offer the same immunity from certain diseases

that is offered by the high Andean or Himalayan plateaus. The same wide difference also exists as to the dryness and humidity of the air,—as all extremes of hygrometric conditions are to be met in the above-named regions, California alone exhibiting every extreme, from the 5 per cent. in its arid regions—which even goes lower still—to the point of 100, or saturation, which is at times reached on the coast. The islands to the north of Scotland, the Scotch hills, and the west of Ireland, as well as England, are in a continued moist atmosphere; while the opposite conditions exist on the different levels of the high mountain-plateaus of the Andes. Humidity of the air, as gathered from its natural source,—the ocean,—can hardly, then, be accused of being the morbific element elsewhere.

The same may be said of mists, fogs, or rains, as every possible condition in which these are to be found is met in the above localities—from less than an inch of rain to a maximum of 100 inches per annum are represented—to which might be added the Asiatic localities that have excessive rain-falls, as of 500 or more inches, which are also exempt from phthisis. The number of rainy days, also, is represented by either extremes, as much as are the winds, electric condition of the air, and diaphaneity. Density of population, which has been accused as a factor of phthisis, has been shown by Hirsch not to be such a blamable element, as he cites seven cities that have from 20,000 to 320,000 inhabitants, without any accompanying phthisis. The material collected by the Swiss Statistical Bureau and the researches of Müller, Schroter, Kuchenmeister, and others have demonstrated that it is more in the manner in which a population lives than its mere density that is the real factor of disease.

From "Our Italy."
Copyright, 1891, by Harper & Bros.

BEACH SCENE AT SANTA CATALINA ISLAND, SANTA BARBARA CHANNEL.

What, then, is the condition, that can be termed climatic, that is to be found in all these different regions in anything like an analogous degree of constancy? The only climatic factor that unites these regions, and that can be claimed as the exempting cause of disease and as the preserver of health and longevity, is their INVARIABILITY OF TEMPERATURE, a temperature that uniformly stands moderately low, and none other. In the island of Monach, the most westerly of the Hebrides group, are to be found the warmest winters—it being even warmer than in Ventnor—and the summers are the coolest in Britain. In the Andean elevations there is not the difference of one degree between the winter and the summer means, and, on the coast of Southern California, a nearly alike equability exists. That this is the real and only cause has been well demonstrated by the researches of Haviland, Morselli, Mitchell, of the United States; Mitchel and Buchan, of England; Bennet, Wilson, Richardson, A. McLean Hamilton, Gihon, Bell, and hosts of others. Aside from the consideration of the immediate injuries or physical perturbations that are apt to follow atmospheric disturbances, there is the very important fact that shifting temperatures make ventilation inconstant and very irregular and at times even impossible; and this, as a disease-producing factor and as a life-shortener, is fully dwelt upon by many of the older writers. Tissot, of Lausanne, long ago recognized this as a cause of the then great Swiss mortality, and pointed out its remedy.

METEOROLOGICAL CONDITIONS AND DISEASE.

The ordinary reader will probably require some general information in regard to the general effects of climate, altitude, and other conditions on consumptives.

Such information, aside from the mere meteorology of Southern California, will greatly assist the reader in coming to a conclusion. The simple exhibit of an atmospheric condition is one thing, but what most persons are interested in is the knowledge whether it is injurious or beneficial. They also are interested in knowing how different meteorological agents act singly or in unison with others. The considerations of climatic conditions in a general way will probably assist the reader more than a fruitless group of set essays on meteorological factors, which, when taken singly, are simply going out of date in medical climatology. To explain some of these subjects will be the object of this introduction. The reader can draw his own conclusions from the matter presented to him.

SEA-AIR AND MARINE CLIMATES.

The consideration of the effect of sea-air on the constitution has been one of great interest, research, and one that has caused considerable acrimony.

Is sea-air injurious to the phthisical? On this question there was great difference of opinion. Rush believed that it was, and advised strongly against a sea-side residence. Laennec was so pious a believer in its efficacy that, if his patients were too feeble to stand the journey to the sea-shore, it was his practice to strew sea-weeds and other marine *débris* about the apartment to impregnate the air with marine odors or, as he imagined, with an artificial sea-air. Rush believed in the South, and those of his patients unable to travel he inclosed in conservatories of a stated temperature, which he found a good substitute for a Southern journey. Later, Jules Rochard, of the French navy, in a memoir to the French Academy, which was awarded a prize, gave to sea-air a

HOTEL CORONADO FROM THE NORTHEAST.

very bad reputation. The title of his paper showed the source of his deduction, his memoir being on "The Influence of Navigation and Warm Countries on the March of Pulmonary Phthisis." M. de Martineng pointed out that, if the navigation had been to colder countries, he never would have written the book; as warm climates, and not sea-air or navigation, were the morbid cause of the rapid march of phthisis.

De Pietra Santa, a noted authority on climatological therapeutics, advises the invalid not to neglect the sea-promenades in boats, relying greatly on the "sea-air bath" obtained from pulverized sea-water, as forced into spray by the action of the oars.

J. Henry Bennet, an authority noted for his clear views, as expressed in his work on pulmonary consumption, a work to be read with pleasure and profit, gives it as his opinion that, "to chest cases in general the proximity of the sea is decidedly beneficial."

The rarity of phthisis among the inhabitants of the Hebrides, Feroë or Shetland Islands, localities of decided marine atmosphere, or its almost total absence from Turks and Caicos Islands, of the Bahama group, exposed to the full influence of the Atlantic (Bell, in *Medical News*, August 3, 1889), favors the belief that sea-air must have a sanitary influence.

Comparative statistics between the navy and army give the navy a smaller ratio of deaths from chest affections, and, in instances where the injurious unhygienic practices peculiar to the navy are omitted, the effect of a marine life is found to be remarkably salubrious and preventive of disease. ("Sea-Air and Moisture on Shipboard," by Medical Inspector Turner, *Hygienic and Medical Reports*, 1879.)

Richardson, quoting Boudin, shows that in 1856 the

deaths from consumption among the British troops of the line were 8.9 per 1000; in the guards, 12.5 per 1000; and the deaths from phthisis in the British navy, from 1830 to 1856, inclusive, were 1.76 per 1000 men.

Haviland found sea-air beneficial in respect to heart disease and dropsy; remarking, "that whenever the sea-air has uninterrupted access, we find a low mortality from those diseases." He further observes that a warm, well-drained soil is coincident, as a rule, with low mortality from phthisis. (Richardson, "Preventive Medicine.")

On investigation, all objections to sea-air, from Rush to Rochard, will be found to depend on causes which, if eliminated, would leave sea-air innocent of any deleterious effects. Rush came to his conclusion from observing the death-rate of phthisis on the northeastern coast of the United States, where sudden and great changes of meteorological conditions are the rule. Rochard was unable to observe that the sea-air had no morbific effects if separated from the extreme variability of the northwest coast of France or from the tropical heat of the French colonies.

According to Wilson, in England the registration returns of deaths among sailors of the mercantile marine show that the proportion of deaths from consumption, as compared with those from other causes, is ten times less than it is amongst the English land population. But, if we take only the deaths that occur between the ages of 15 and 45 (the usual period that sailors remain at sea), we shall find the result still more favorable; the proportion of deaths from consumption, as against those from all other causes, being sixteen times less at sea than on land.

To its presence the Scotch isles, Madeira, the South

of England coast, and the Mediterranean Riviera, as well as the North African coast, owe their great salubrity, which is only diminished in proportion as the land influences displace those of the sea. The nearer approach to an oceanic climate, the greater the salubrity.

OCEAN-MOISTURE AND SOIL-MOISTURE.

A purely sea-atmosphere has everything in its favor: freedom from impurities, either palpable or gaseous; a constant uniformity of humidity and of temperature, with constant mobility as a body, rendered unavoidable by the winds constantly playing over its surface; and, in the latitude of Southern California, the greatest possible number of hours' exposure to the chemical influence of a bright and warm sun.

One element of sea-air has been made the subject of undeserved and unfounded censure: I refer to moisture, or humidity. The effects of *soil*-moisture we all admit, but the moisture is only the vehicle for the injurious germs and ferments,—moisture is only an ingredient in a combination, the combination being responsible for certain results. When Megendie, by confining rabbits in dark, damp cellars, was convinced that he produced tubercles in their lungs, the darkness, excess of carbonic acid, and soil-air, with its filth, ferments, and resulting impairment of nutrition, rather than moisture *per se*, should have been accused as the cause. The healthier air of the street may be moist to saturation, while the disease-breeding cellar-air may be relatively one-third drier.

Briggs, the best authority on atmospheric moisture, assigns 70 as the relative humidity best consistent with health for the United States (Turner, in *Hygienic and Medical Reports* for 1879), the average relative humidity the world over being, according to Levy, at 72.

RAIN AND RAINY WEATHER ON COASTS.

Much stress has unnecessarily been laid on the relative humidity of the air and the influence of rainy weather, in their relation to the phthisical; facts do not bear out the groundless fears with which these two conditions have been regarded. J. Henry Bennet observes that rainy weather is not injurious to health if the temperature is not below 55 degrees or above 65 degrees. It has been observed that seasons of great rain are, as a rule, healthy.

Dr. Port, of London, found that, at Mentone, on the Riviera, during the rainy winter and spring of 1878–79, with fully half the days rainy, with an unusually low temperature, the phthisical patient did better than at any other season. (Ziemssen, "Hand-book of Therapeutics," vol. iv.) Drs. Frank and Marcet, of Cannes, during the same season, experienced the same weather, with the same desirable results. Bogota, in South America, already mentioned, also favors this opinion as to effect of rain-fall. One strange example is given by Watson: that of 300 women, engaged in dredging coal, wading all day in the sea, escaping an epidemic of influenza, at Newcastle. All these conditions were perfectly consistent with constant moderately low equability of temperature.

The explanation of the above is simply that invalids do better in an equable, moderately low temperature. Sudden changes or great ranges of temperature are impossible during the prevalence of moisture or rainy weather coming constantly from off the sea,—the coast climate being, for the time being, converted into an insular type of climate, with a total displacement of all land influences. It is only during the bright or dry weather that the shores of the Mediterranean are subject

From "Our Italy."
Copyright, 1891, by Harper & Bros.

MAGNOLIA AVENUE, RIVERSIDE.

to those changes and variations of temperature and to chilly winds, when the land has displaced the marine climate.

MISAPPLIED TERMS AS TO MOIST CLIMATES.

The smallness of the amount of humidity in the air is not, as has been supposed, in proportion to its healthfulness. In proportion as atmospheric humidity has been accused as deleterious to human health, its dryness has been praised in the most indiscriminate manner as being healthful. To such a degree has custom carried this groundless distinction that any section from whence benefit was derived was without ceremony enrolled in the favorite class; hence, the dry winters of Minnesota or Dakota,—where, however, there is a winter relative humidity of 79.7 for January.

EXTREME DRYNESS OF THE AIR.

Extremely dry air is injurious from its unavoidable association with extreme variability. On the California coast this rule is somewhat modified by the nearness of the two opposite conditions of the Colorado Desert and the Pacific Ocean, which here have the same influence as they have in regulating the temperature; that is, in producing that anomalous condition of dryness with little variation. That the ordinary condition in which dry air is found elsewhere is not conducive to health will be evident from the following authentic examples. The results of variability in producing pathological conditions is here plain and self-evident, especially in inducing rheumatism, pneumonia, and phthisis; fully showing that moderate relative humidity and equableness are far superior to dryness and great variability.

Dr. William A. Winder informs me that while stationed at Fort Yuma, in 1853, the Indians of the

Desert were then as fine specimens of physical form as could be found, only the Seminoles exceeding them in development,—athletic and deep-chested and of wonderful endurance; during the different military expeditions and at the different army posts he noticed that these Indians had one great enemy that took them off rapidly, that being pneumonia. There was some phthisis, but evidently as a result of pneumonia; rheumatism was not then as prevalent as at present. He particularly observed that those periods characterized by the greatest range of temperature were those in which attacks of pneumonia were most numerous. At the Old Mission of San Diego, then a military post, and at other camps on the west side of the mountains, he observed neither pneumonia nor phthisis.

Surgeon L. Y. Loring, of the army, has since 1870 passed several years at Fort Yuma, near the 32d parallel, and at Fort Mojave, on the 35th parallel of latitude, both on the eastern side of the desert. He informs me that in winter, spring, and fall the range of temperature in twenty-four hours is something extreme, at times from 90 degrees, or over, in the day, dropping down to 17 degrees or 20 degrees at night. Although the troops never developed any disease that could be ascribed to climate or locality, phthisis was prevalent with the Indians at both posts, especially at Mojave. Rheumatism was also quite common. Both diseases were greatly aggravated by a syphilitic taint, their mode of living, diet, and going about naked. They use but little animal food, but subsist mainly on the mesquite bean, wild potatoes, and what little corn or grain they raise; so that, being poorly nourished, they early become consumptive.

In the Sahara the Arabs observe great precaution

against rheumatism, where heavy woolen garments are worn as protection; and Professor Jean Vilain, of Paris, gives some interesting facts relative to the action of the extremely dry, as well as extremely variable, atmosphere of the Sahara Desert on the lungs of its native inhabitants, which also somewhat demolishes our preconceived ideas of the relative health between domesticated and wild animals. Whilst serving as a surgeon to his regiment in Algeria, he dissected the carcasses of fifty lions. Of these he found twenty with diseased lungs, of which fully one-half had but a small remnant of lung left, showing the prevalence of phthisis in the dry air of the Sahara and Sahel Deserts. At the Jardin des Plantes, in Paris, seven lions died since 1869 (written in 1879), all born in Paris. He dissected them and found their lungs perfectly healthy. (*Popular Science Monthly*, November, 1879.) Desert-air has 1 per cent. more oxygen in its composition than the air of the Nile Valley, and does not exhibit a trace of carbonic acid or any mephitic gases; not a favorable air for microbes or the ubiquitous bacillus. The atmosphere is exposed to sufficient sunshine at all times to render it free from germs.

Here we have an atmosphere aseptic to an extreme degree, and nothing detrimental to account for the phthisical occurrence, except it be the extreme variability of temperature between day and night, the range in winter at times reaching 100 degrees. Interference with proper nutrition, by the unavoidable irregularity of meals incidental to a wild lion's life on the desert, may be an additional cause, but is not such a morbific cause as the irregularity of temperature; the piercing cold of the dry air being more deadly when on the heels of an extremely hot day.

At Cairo, with an atmosphere whose humidity runs

up as high as 80 degrees, during twelve years, out of a total of 26,300 cases treated at the medical school, there were only 18 of phthisis and 22 of pneumonia. ("Climate of Egypt," by Prince Ignaze Zagiell.)

CONSUMPTION AND TEMPERATURE.

The stress laid on warmth as a necessary adjunct to a climate for the phthisical is not fully warranted, either by the geographical limits of the disease or the results obtained in warm regions.

Young, in his "Night Thoughts," in speaking of his daughter, then ill with phthisis, of "tearing her away from her native clime, where black Boreas blows the breath of death, and with his paternal arms to carry her nearer the sun," only reflected in a poetic strain the practice of the time. Geographical limits make "black Boreas" very friendly to the phthisical, and practice teaches that heat has a way of rendering latent tubercles active; but the tuberculous patient is drawn toward warmer climes, like the victim of frost to warmth, or the overheated to deceptive shades and cool drafts; as if the immediate gratification of being immersed in a temperature agreeable to the body was all that was required.

GEOGRAPHICAL LIMITS OF CONSUMPTION.

North of the 60th degree of latitude phthisis is hardly ever met. Lombard, of Geneva, gives it a little greater range to the north, but investigation shows that between the 55th and 60th degrees there is but very little phthisis, while to the north it disappears entirely. From the 55th to the 35th is its most active field. Below the 35th it enters the dominion of hepatic and abdominal diseases, with which it harvests its victims as far as the 30th degree of latitude, from whence to the equator

BEACH AND HOTEL AT REDONDO, REDONDO BEACH.

it leaves a clear field to the latter diseases. It is remarked that phthisis is more slow or latent in the North than in the South; the nearer the equator, the more uninterrupted and rapid its course. I am satisfied, from a great number of examinations of bodies and the evidence of cicatricial tissues found on the lungs of persons who claimed never to have had phthisis, that incipient phthisis is much more common in the northern part of the temperate zone than is supposed; as well as that many spontaneous cures are effected; and, further, that the recoveries are more frequent as higher latitudes are approached. In cold regions phthisis is developed not so much from cold, but from the variability where it exists, and from the "defective ventilation of the houses warmed by stoves, and probably still closer in the North than in the South." (Bennet, "Pulmonary Consumption.") The natives of Labrador, in tents made of spruce-branches, more or less open to the air, and suffering privations, are strangers to phthisis; but when these same natives come down to the St. Lawrence to fish, to live in well-built houses, and are well fed, many of them, in the course of a year or two, become consumptive and die miserably. (Bennet.)

THE RELATIVE MERITS OF ALTITUDES.

Much has been claimed for the superiority of high altitudes in favor of the phthisical. I am far from being convinced that a low elevation, with a dry soil, equable, moderate temperature and humidity, is not only superior in the majority of cases, but far more practicable.

It will occur to those who have had charge of any of the charitable institutions on the coast of California that the majority of the cases of chest affection come from the mountains; and I well remember that, during a term of

service in charge of the County Hospital of San Diego, running over several consecutive years, not a few had chronic pulmonary diseases, originating in high altitudes east of the Colorado River, where acute pulmonary diseases prevail, they having gradually worked their way to the coast in hope of relief.

The dry soil of high altitudes, the pure air, sparse population, out-of-door life, and the physical exercise of its people are antagonistic to consumption. These conditions can be duplicated on the California coast at any port from San Francisco as far as Cape St. Lucas, from the shore line to the peaks of the coast range.

WHY PHTHISIS IS MORE PREVALENT ON LOWER ELEVATIONS.

Sea-ports and navigable rivers are the portals and highways of commerce. There, cities and industrial centres are situated, where, from social, but not climatic reasons, every condition exists favorable to the production of phthisis. An undrained soil or marsh land in the neighborhood may furnish a local climatic cause as an assistant, but, as a rule, there is quite sufficient in the combined causes resulting from civic crowding for all purposes. The combination of these conditions with the rivers or harbors is simply a natural law of industrial trades and commerce, and the greater prevalence of phthisis in these locations is not due to the harbor or river especially, but, as stated above, to the results of several conditions; conditions to escape from which it is necessary to give up a civic life, and retake the pastoral or nomadic existence of our biblical forefathers.

ARE ALTITUDES EXEMPT FROM CONSUMPTION?

Efforts have been made to establish a definite limit to the altitude beyond which there is complete immunity

from phthisis; this has not been attended with that success that was anticipated. High plateaus are undoubtedly very free from it, but, as the coast of Southern California enjoys the same immunity, it cannot be a simple question of altitude.

Kuchenmeister gave 3000 feet as an estimated altitude in Switzerland for immunity from consumption, while Dr. Emil Miller, in his work on the distribution of phthisis for the same country, gave some interesting data on the subject under discussion. In one of his tables we find the following showing of the effects of industrial trades, as compared to an agricultural or pastoral life, on deaths from phthisis. The industrial class comprises occupations entailing confinement in the workshop or at home:—

Altitude from 1600 Feet to 2300 Feet.

Industrial,	10.2 per cent.
Mixed,	5.9 "
Agricultural,	5.3 "

Altitude from 3000 Feet to 3400 Feet.

Industrial,	6.5 per cent.
Mixed,	6.1 "
Agricultural,	3.5 "

Altitude from 3400 Feet to 4400 Feet.

Industrial,	9.8 per cent.
Mixed,	7.5 "
Agricultural,	5.0 "

Above the elevation of 4400 feet the purely industrial class does not occur, but there is a class following a partly industrial and partly an agricultural life, among whom, up to an altitude of 5000 feet, there is a mortality from phthisis of 7.7 per cent. Above 5000 feet the population is very sparse and wholly pastoral and agricultural, deaths from phthisis still occurring, the rate being 4 per cent. of the mortality.

VENTILATION AND NOT ALTITUDE THE FACTOR IN EXEMPTING.

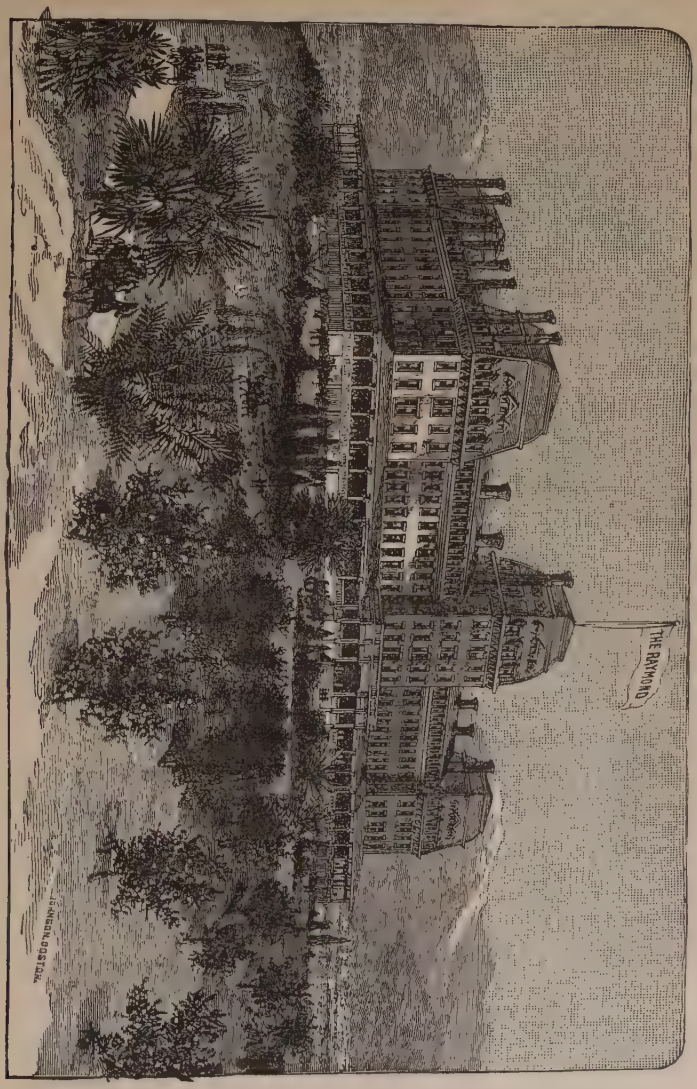
The difference in the ratio of mortality between an altitude of 2700 feet, at 4.7 per cent., and that of an average of 3900 feet, at 9.8, in the industrial class, speaks for itself. Sedentary occupations require artificial warmth in cold weather. In regions where the cold of winter is extreme,—a condition inseparable from altitude in the temperate zone,—houses or factories are built with an eye to including all the warmth and excluding all the cold air; the higher the altitude and the colder the winter weather, the more imperative this object becomes, and more impracticable is ventilation, the true safeguard against phthisis; hence the danger and death-rate from phthisis at high altitude, and to this cause may be attributed the prevalence of phthisis in the mountains of Norway and Sweden.

EQUABILITY OF TEMPERATURE AN IMPORTANT FACTOR.

The death-rate from phthisis in Southern California can never reach as high as that of the lowest rate of the Swiss mountains, for the simple reason that the mechanics are not subjected to that overheating required during extreme cold weather elsewhere, and to the subsequent variations, but are continually, whether in factory, home, or out-of-doors, always in an atmosphere of the same temperature, and, while at work, in a continually changing volume of air. This effect of free ventilation is observable in the healthy appearance of all those whose occupation keeps them confined to work-bench or desk. Free ventilation during the working hours is possible at all times in such climates as that of Southern California.

Where the air is pure and uncontaminated, and constant and free ventilation possible, as in Southern California, there is your true immunity from phthisis,—

conditions emphatically impossible in any altitude under the temperate zone.



THE RAYMOND, PASADENA.

The question of altitude has been too arbitrarily settled in its favor with regard to phthisis, without due

regard to any discriminating conditions. Latitude does here exercise a decided influence, which is generally overlooked; an altitude under the equator, or within the tropics, and an altitude on the 40th degree of latitude are two entirely different conditions, and more so in their effects. On the St. Bernard, at an elevation of 8000 feet, stands the Monastery, the highest inhabited spot in Europe, being on the 46th degree of latitude. Arctic weather here prevails, and here is to be found the shortest-lived of any of the monastic orders; the climate, although polar, gives to the poor monks none of the immunities enjoyed by the dweller of the arctic circle; their term of office or service is short, and those who escape pneumonia generally fall victims to phthisis later on. At Bogota, on the contrary, nearly under the equator and at an altitude of 9000 feet, the winter mean temperature is 59 degrees and that of spring and summer 59.5 degrees, and phthisis and pneumonia are unknown. All of the altitudes to which reference is made from Anahuac down, as affording immunity from phthisis, will also be found within the tropics, where equability and ventilation, and not altitude, are the real factors.

It is this equability, allied to pure mountain-air, free ventilation, and out-of-door life, that gives to Jauja, in Peru, its great immunity from and curative power over phthisis, 79½ per cent. of the cases going there being said to be cured. Here the temperature is never varying from between 50 and 60 degrees. Areguipa, also in Peru, and at an altitude of 8000 feet, enjoys a like climate and reputation for health. The causes of this immunity and effects of these tropical altitudes are in nowise applicable to those of the temperate zone, where a condition as different as in the height of their snow-line exists as regards pulmonary diseases. Leadville, in

Colorado, with its extremes of temperature, and a like elevation in Peru, with its equability, give an entirely different ratio for acute pulmonary attacks and their results.

DIFFERENT EFFECTS OF SUNSHINE AND SHADE.

In a land that owes its all to its bright, warm sun, it would be strange, indeed, if its abstraction produced no difference. That it does, seems to cause a feeling with some that the climate is faulty. Sunshine and shade are no more alike here than anywhere else, and just as different. Southern California is generally sought for its balmy, aseptic air, genial atmosphere, and invigorating climate. These and sunshine, or a southerly exposure, go together, and are no more to be looked for in the shade or in a northern exposure than the comforts of a Pullman in a cattle car. Violets and invalids require a different location and atmosphere. They would not do well in the same location; and, as long as there is a preponderance of locality for invalids to thrive in, I do not see any reason why Southern California should be denied some little spots, cool and moist enough, even if made artificially, wherein to grow the gentle and fragrant violet.

Traveling in the Alps I have found fully more difference between the temperature of a sun exposure and that of shade than in that difference on which so much stress is usually laid as existing on sea-coasts, where the winters are mild and genial. As to the difference to be found at about sunset, there is really no comparison between the two. During carefully-made observations for a full month, made one hour before sunset, at sunset, and at the following hour, by Dr. Hearne, of the United States Signal Service, at San Diego, the following respective means for the different observations were obtained: 62.6,

60.1, and 60.8 degrees. Besides, during the day, this coast is never subject to such sudden or great variations as I have noticed in Alpine regions at any seasons, especially at the lower elevations and in the valleys along which the roads wind.

I have trudged along the valley down which flows the Arc, in the fall of the year, and, with the disappearance of the sun behind some Alpine peak, have felt the atmosphere at once assume a cellar-like chilliness that is very depressing. On the higher elevations habitations are very chilly, unless warmed to overheating. J. Henry Bennet, who spent a summer at the different Alpine health resorts, noticed these extreme variations. At Murren, 5500 feet high, in July he found at 1 o'clock a temperature of 78 degrees, and one hour afterward it reached 80 degrees; during the same month a storm deposited three inches of snow on the hotel-veranda. During his excursions up and down the mountains he particularly observed that in passing through the cold fog-clouds it resulted in pains in the chest and laryngeal irritation.

I never noticed specimens of extreme old age in the Alps as I have in Southern California; neither have I seen such age in any of the high altitudes of the United States; in fact, I do not believe that such age can ever be attained on high elevations, unless it be on those under the equatorial borders of the tropics, where there is the same moderate equability of temperature and immunity from disease.

SEA AND MOUNTAIN CLIMATE ON INFANT MORTALITY.

In Switzerland we also find an excess of infant mortality under the first year of life. A comparison as to the effect of a marine climate over that period of life

will also be interesting, as compared with that of the climate of elevation. In Scotland we have all these conditions, with this exception, that the marine climate, even when not pronounced, in a manner modifies that of the whole. In the purely insular climate (the Shetlands, Orkneys, and Hebrides), where the marine climate is at its maximum, we find the death-rate to be 8.05, on the mainland country districts 9.80, and in the cities a rate of 14.91, while in Switzerland the rate is 18.79. In Ireland, with its insular climate, it is only 9.59. In France there is further evidence of the increased mortality, due to the variability of mountain regions, and confirmatory of the general proposition that the nearer the approach to perfect equability the more is health and long life made secure. Villermè and Edwards—in which they are confirmed by Dr. Lombard, of Geneva, on the main points—have observed the great mortality during the period under discussion, and have erroneously ascribed it to cold alone. For the whole of France the mortality under 1 year is 16.80, while that of Alsace-Lorraine is 21.27. Now, here is an interesting study. In the rest of France we have its great extent of sea-board, its great river-valleys, that of the Rhone, Loire, and the Seine, where the large cities with their great civic-infant rate (in Paris-on-the-Seine it is 39.07) are to be found. In these localities many that are puny and of poor stamina survive to propagate a weakly offspring; whereas, in the mountainous regions, as observed by Bennet, such infants are nearly sure to succumb, thereby leaving only a strong propagating element. From this it naturally follows that a weaker infant stamina exists on the coast and river-valleys, and more robust and healthy stamina is inherited in the mountains; and yet, with all this in favor of the mountain infant, there is his greater mortality to

be accounted for. When his robust ancestry, better quality of food, and purer air are all considered, the mountain-bred infant should outlive his not so fortunate young countryman on the lower levels or sea-boards; but the reverse are the facts.

One cause of this excess of mortality in France has been partly explained by Edwards, who accuses cold as being the cause. I do not agree with him on this. Infants born in the south of France, Italy, and Spain followed the grand army in its invasion of Russia in 1812, and many returned alive through all the exposures and horrors of the retreat. Children are born under the greatest of exposures to cold in northern regions, as I have seen among the Indians in the Northwest, and live and thrive. The Esquimau child is often born in an ice-hut with a very low temperature; so that mere cold cannot be said to be the cause of infant mortality.

In England it has been found that during the first month of life 1 child in 21 dies, whereas in France it is 1 in 14. Investigation has shown that the excess of this French mortality was in winter, and greater in the north or mountain districts. Villermè and Edwards undertook to explain this by the custom of civil registration and religious baptism, which exposed the tender infant at this period to cold. Admitting that the cold, damp church, with its filth, ferments, and the excess of carbonic acid in its atmosphere; and that the musty, foul air of the ordinary mayor's office, unventilated and close, as it necessarily is in the northern provinces, must have a morbific effect on the vital organism of the infant, I cannot see where mere cold can be made either a primary or even a determining cause of this mortality, unless it be in the sense of an extreme condition from the heated apartment to which it is returned after these ceremonies;

rooms overheated from a mistaken idea of parental solicitude, more so than usual, simply because the child has been out in the cold. The real cause of the mortality lies simply in the vitality-depressing influence of the foul, miasmatic air in the public places, and in the extreme variability of temperatures to which the child is subjected; and cold, by itself, or the condition in which it is encountered—in the open air—being in reality the most friendly to the infant of all the conditions. In an

ARROWHEAD HOT SPRINGS AND HOTEL, SAN BERNARDINO COUNTY.

equable temperature like that of Southern California, at sea-level, or in Bogota at its high elevation, but, with a like climate, such a mortality is simply impossible, owing to an utter absence of the combined causes.

The "Statistics of the Kingdom of Bavaria" give to that kingdom a mortality of 34.04. Bavaria, to the east and north, has its Alps and other mountains, and is situated in the centre of Europe, away from any oceanic influence. Spain, a high and mountainous country, with its

population at higher elevations than that inhabited by the masses in France, has a mortality of 18.61. European Russia, with its continental climate, has a rate of 26.68; while in some portions of the empire the winter mortality among those under 1 year reaches the great ratio of 69.1. The Russian climate is one of extreme range; at Yakutsk, 300 miles south of the arctic circle, the winter temperature reaches —58 degrees and that of summer 99 degrees,—a range of 157 degrees for the year. Ventilation among the poorer classes is quite impracticable during the extreme cold winter; this fact and the great variability in temperature show their effects in this great mortality, which in summer—ventilation being practicable—drops down to 31.6 per cent.

A comparison of the climates of the mountainous and inland continental plains, with their great range and impracticable observance of hygiene and their infant death-rate, in contrast to the mild, equable, low temperature of the insular climates and their low death-rate at this period, speaks for itself as to the effect of a marine climate in inducing disease of the respiratory organs, as it is that class of disease which, in winter and in the high elevations of Europe, causes the greatest mortality among infants.

MARINE CLIMATES AND ADULT LIFE.

The infant, aged, and invalid have a like susceptibility to atmospheric changes, or anything that tends to depress the vital functions. What a climate will do for one of these three classes, it can be depended upon for doing to either of the other two.

Statistics as to the migratory invalid are not to be had, and no exact census as to longevity is obtainable; but the influence of the Scotch climate on infant mor-

tality, duration of human life, and in a therapeutic sense —as well as that of Ireland, which is also well known— fully carry out the proposition already set forth. Equability of temperature and health go hand-in-hand; there is no disease that equability induces; but its reverse condition brings respiratory-organ diseases in the temperate, and of the abdominal organs in the tropical, zones. Even in the equable British Islands, it is observed by Bennet that the Registrar-General's reports show that the healthiest summers are those that are the lowest in temperature; the healthiest winters, those that are highest. The seasons of least mortality in the year are those in which the temperature is neither extreme in one sense nor in the other. Conversely, the years and seasons of the greatest mortality are those in which extremes of cold in the winter and of heat in the summer are reached.

Aside from the above reasons, every other condition being equal, a great majority of pulmonary affections are only secondary to some cardiac or renal affection. The profession of to-day entertain a different opinion about the etiology of pneumonia from that held some years ago. Had Delafield written his "Studies in Pathological Anatomy" in the times of Broussais, he never would have headed his classification with "Pneumonia from Heart Disease." Now, it is well known that a diseased kidney will produce organic change in the heart, which, in its turn, will affect the lungs. In these cases—and there are many—altitude is altogether inadmissible; such cases do well on sea-level, but give a disastrous result when sent to altitudes. I have known such cases, who were doing well on the shore, suddenly develop a mitral insufficiency by a camping-trip to an altitude of 4000 feet or over, and return in a hopeless condition.

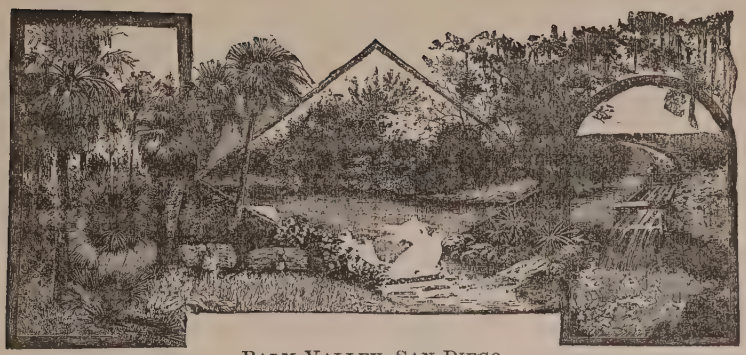
Here is a point that will bear explanation. The question is often asked, and with apparent reason, "Has not California more heart and kidney diseases than any other State in the Union?"

There are, undoubtedly, more uncomplicated cases of the above diseases that jog along in this State than in any other, for the very simple reason that elsewhere a pneumonia, a bronchitis, or some other intercurrent disease would long ago have stepped in and taken off the patient. Here such complications do not occur, unless provoked by very serious and persistent aggression on the part of the patient; and then, only in the form of the simplest passive congestion at the end, without the least sign of any sthenic condition,—just a simple suffocation, that gradually takes off its victim; in other cases it may be sudden. It is owing to these uncomplicated cases of heart or kidney disease terminating in this singular manner that the impression above mentioned has been formed. The climate does not produce either of these classes of disease, but it keeps other complications at bay, giving the patient his primary ailment alone to overcome,—a benefit not to be had in an equal degree in any other climate in the United States.

Altitudes are of great benefit in many cases, and the different elevations as necessary, in a therapeutic sense, as the gradation in the cell-power of a galvanic battery. Patients often find benefit from one elevation more than in another. I have had patients who do well at Colton or Riverside for one disease, and others, with the same disease, who improve more rapidly by coming from there to the sea-shore; and it is better to fit the climate to the patient than to undertake to fit the patient to the climate. In many cases of incipient tuberculosis, with an otherwise good organism, nothing better can be sug-

gested than a sojourn in an altitude; especially the balsamic-atmosphered highlands of Southern California, where acute pulmonary diseases do not occur.

Having now given the reader some general idea regarding the relations that exist between health, longevity, and disease and climates, as well as between different meteorological conditions, we will now proceed with the description of the meteorology of Southern California. After a careful perusal of the foregoing remarks, the reader will be better able to comprehend how the described atmospheric and other physical conditions will be likely to affect man, either in health or in disease.



PALM VALLEY, SAN DIEGO.
(By permission of Southern Pacific Company.)

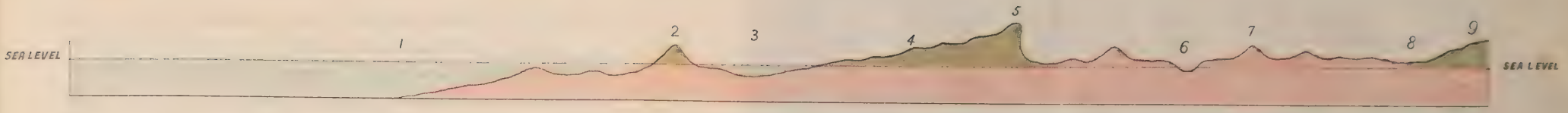
SOUTHERN CALIFORNIA:

Its Physical, Meteorological, and Climatological Conditions.

AREA AND EXTENT.

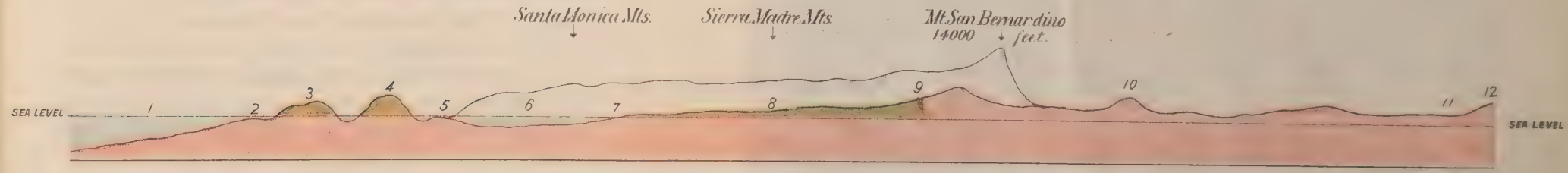
Southern California covers an area of territory equal in extent to the States of Maine and Ohio combined, or of the combined surface of England and Wales. In its widest diameter, from east to west, it is over 380 miles in breadth, and from north to south its diameter is over 180 miles. Its northern boundary is formed by a chain of mountains,—spurs of the coast range and Sierra Nevada,—very high and mountainous in the west, but more low and hilly to the east; the east is bounded by the Colorado River, the south by the Mexican frontier, and the southwest and west by the Pacific Ocean. The shore line of the mainland faces Santa Barbara Channel and its chain of islands that stand out at sea from 20 to 70 miles distant. From Point Arguello—the western limit of its coast—to the Mexican boundary monument on the sea-shore, which marks its southerly coast limits, the shore trends to the east a distance of over 214 miles, this being the difference in latitude that exists between the two points; this also fully exhibits the southerly exposure of the coast. Its southern borders are nearly on the 32d degree of north latitude.

A glance at the map will show the high and extensive ranges of mountains, running east and west, which form the northern boundary of the California of the South; below these are seen the Santa Inez and San



PROFILE, EAST AND WEST, 50 MILES ABOVE BOUNDARY LINE.

1. Pacific Ocean.
2. Channel Islands.
3. Santa Barbara Channel.
4. Semi-tropic California.
5. Mountains, 4500 to 8000 feet high.
6. Sink in Desert, 300 feet below sea-level.
7. Desert Mountains, 2000 to 3000 feet high.
8. Colorado River.
9. Mountains of Arizona.



PROFILE, EAST AND WEST THROUGH LATITUDE OF SAN GABRIEL VALLEY. High mountains lay parallel to above, just to the north. The outline of these is shown in Light Green shade, extending from near Fig. 5 to Fig. 9. 7 to 9 is the length of the San Gabriel Valley. The Santa Ana Valley region exhibits a like topographical profile. Green represents inhabited, and brown the Desert portions.

1. Pacific Ocean.
2. Submarine range of hills of San Miguel.
3. Santa Rosa Island.
4. Santa Cruz Island.
5. Anacapa Island Hills (submarine).
6. Santa Barbara Channel.
7. Wilmington, Mouth of Los Angeles or San Gabriel River.
8. San Gabriel Valley—about 700 feet elevation at Fig. 8.
9. Edge of Desert to the east of Colton and San Bernardino.
10. Extension of San Bernardino Range into Desert.
11. Colorado River—eastern boundary of Southern California.
12. Mountains of Arizona.

Pacific Ocean
Channel Islands

5 Mountains open to S oc ic ange
6 Sink in Dese t ... ... Lowe ea k ...

Fernando Mountains, which form a second chain; below these still are seen the Santa Monica, Sierra Madre, and the San Bernardino ranges. It is these mountain chains that insure to Southern California so much more rain than that which falls in the interior of Middle California; and why seasons of drouth in the large valleys to the north of Mojave are not followed by like drouths in the south is here explained, as these high ranges of hills intercept and precipitate the moisture in the air, which is borne upward against their southern slopes by the southerly winds during the seasons of rain, the clouds losing the greater part of their moisture in passing over these three successive ranges. It is also these same mountain chains that divide the California of the South from Middle California, so to make such a unique and distinct climate to the former. The abrupt descent that the mountains make from their highest elevations down into depths of the desert will also explain how the great heat of that locality is prevented from flowing over to the westward, and shows plainly how this overheated air, which at times reaches a temperature of 140 degrees, is forced upward into the cooler regions several thousand feet in the air before it flows to the west—the only direction it can find as an outlet; as to the east, the arid wastes of Arizona offer a like column of overheated air that hems it in from that direction. It is, therefore, forced so far upward that it loses the greater part of its heat before flowing down over the western slopes of the mountains. This topographical feature will be noticeable by consulting the map showing the sectional profiles, where it will be seen that, whereas the ascent from the sea-shore is made in from 45 to 60 miles on the west, the descent from the crest to the desert is often accomplished in a few miles.

MOUNTAIN CHAINS.

At Point Conception the coast range of mountains follows the sea-shore in its abrupt turn to the east, running in that direction to the San Emidio Mountains, so as to form a mountainous rampart to the north; from the sea-shore the Sierra Santa Inez forms another east and west range to the south of that of the coast range. Further inland the San Fernando range forms

VIEW OF SAN LUIS REY MISSION, SAN DIEGO COUNTY.

a mountain chain to the south of the San Emidio Mountains. The Santa Monica and the San Antonio are two more ranges of mountains that run east and west, the former being on the coast; the Sierra Madre and the San Bernardino mountains also face the south. As the south is approached, we meet the Santa Rosa range, San Jacinto range, and Smith's Mountain; all of the above mountains face to the south. Across the San Gorgonio Pass, which leads through a gap south of Mount San Bernardino from the extensive valley of the San Gabriel into the desert of the Colorado, the coast range again

take up their southerly course with a varying elevation of from 5000 to 9000 feet, and by their presence dividing the California of the South into two separate and opposite-conditioned regions,—that to the west being the semi-tropical garden of the Pacific Slopes, the ideal Eden of Nordhoff and of Truman, the land of summer seas and of perennial spring,—the veritable modern representative of that land which Moses, in describing to the children of Israel, said: "The land whither thou goest in to possess it is a land of hills and valleys, and drinketh of the water of heaven; a land which the Lord thy God careth for." To the east the mountains drop suddenly into the heated and arid wilderness of the desert,—a sandy and irregular waste, intersected by low ranges of mountains having a southeasterly trend, and the hottest region on the American continent; a physical formation as puzzling and as incomprehensible as the Sphinx. With all its aridity and excessive ranges of temperature, its simoons and sand-storms, it is, nevertheless, the home of some nomadic tribes of Indians. Under the head "Altitudes," farther on, the reader will find a closer description of the topography of the Southern California Mountains.

VALLEYS.

Southern California is a land of valleys and plains, as well as of mountains and of sea-shores. Its largest valley is that of San Gabriel, a broad, extensive valley, extending from the ridge of low mountains, at the base of San Bernardino Mountain, as far as the ocean. This broad and beautiful valley has been termed the Lombardy of America, no other large valley in the United States being capable of producing the like climatic features or the like variety of productions. Next in importance there is the Santa Ana Valley, which covers

nearly as much territory as the State of Connecticut. These valleys are more deserving the name of vast plains, as the San Gabriel has often reminded the writer of the historic Plains of Marengo. The Plains of San Fernando lie to the north of Los Angeles, and the San Jacinto Plain—a broad, level stretch of prairie, bounded in by the horizon and distant mountain chains—lies to the south of Colton and San Bernardino. The southern part of Southern California is studded with numbers of lesser valleys, such as the San Luis Rey, once the home of a thrifty Franciscan mission, the second one established by the Spanish and Mexican monks, and which at one time entertained several thousand Indians; the San Diego River Valley,—the scene of the first mission and settlement in California; the valleys of the Cajon, Poway, Santa Ysabel, and Santa Maria. These valleys all present different climatic conditions, these being influenced by altitude and proximity to ocean or high mountains. Some are tropical, others are semi-tropical, and those like the Strawberry Valley are Alpine in character. One need not fear the lack of variety in Southern California, as valleys laden with the aroma of the salty sea or of the mountain pine can be found at only a few hours' ride from each other. The varied productions of these valleys, from the gigantic pine-cones of the north to the banana or the date of the tropics, furnish a pleasing variety of scenery to the invalid; these, with the ever-present flowers to denote a perpetual spring, prevent that *ennui* so fatal to patients.

SOIL.

The soil on the immediate coast and adjoining table-lands is largely composed of a decomposed granite; in many localities there are large patches of a dark clay,

San Luis Rey Mission, General View from Northwest.

which is termed adobe. It is, when wet, very much like putty in consistence, very adherent and unserviceable. It is useless for roads even. The generality of the soil is of the disintegrated granite, and very sandy and porous. At varying depths there exists a hard cement-like conglomerate, which is called hardpan; it may be formed of a mixture of small boulders and soil, or entirely of the soil in conjunction with the cement-like, cohesive material. This layer may be one or more feet in thickness, and is perfectly impervious to the passage of water. In working through it, it has to be blasted by means of powder, as if it really were rock. This peculiar formation is to be found in nearly every part of California. In the small valleys, sand and gravel, with a top layer of loamy earth, forms a very porous soil.

SOIL HEAT AND DRYNESS.

From the nature of the character of the soil, its easy drainage, and the presence of the layer of impervious hardpan, such a thing as soil moisture cannot exist; it therefore follows that there is nothing in the ground to make it either damp or cold, as the heaviest of rains cannot go beyond the layer of hardpan. The hot sun of the latitude is therefore continually pouring its warm rays on a heat-retaining soil. There is no moisture whatever in the ground to come up from below, and, therefore, being always dry, the soil is very warm. At ground-level it is 20 degrees warmer than five feet above it. Cellars are here much warmer at all times than the temperature above ground, and water drawn from wells on the shores of the Bay of San Diego is found to be many degrees warmer than the surrounding atmosphere. The character of the natural vegetation, consisting, as it does, of cacti and resinous plants,

grasses, and shrubs, like the sages, damiana, and yerba santa, sufficiently proves the dry nature of the soils.

To the south of the track of the Atlantic & Pacific Railroad, in San Bernardino County, there rises, from the extensive lava-beds that once came from the westward, a giant cone called the "Crater," which the road-master states is rising at the rate of two feet per year; the ground of this cone is so hot that it will cook an egg buried in its side in a few minutes. This cone and lava-beds are very interesting formations.

RIVERS.

The rivers of this region are not many. The water-shed of the mountains being to the south and west, all of its rivers flow toward the ocean; the character of the soil and its sloping condition make drainage a thing of the greatest facility. As a natural result, the rain-fall is quickly carried out to the sea; and, although the main streams may, during the winter rains from mountains, be converted into turbulent torrents of mad and swift-flowing waters, they are in the summer but the apparently dry beds of the former streams. When the rains have been slowly pouring and long-continued, giving the hill-sides ample time for a thorough saturation, the streams rise very slowly and are much later in reaching the sea. After a season of ample rains, the rivers run in broad, deep currents to the ocean, carrying a vast amount of sand and soil in their rapid descent. This may last until late in the summer; the volume of waters then slowly diminishes, the currents are less rapid, and soon the lessening waters uncover the sandy river-beds. This process gradually proceeds inland, until the whole river-course is a dry, sandy channel, that may extend twenty or more miles upward from the sea-shore toward the mountains,

where the former river still exists, in the shape of a small rivulet, that here ends in the sands. The river has not, however, entirely lost all its identity; the volume of water which it still carries is far in excess of what is visible. It is simply a subterranean river, and one or two feet of digging in any part of its course, from the point of its sinking out of sight in the hills to its outlet at the sea-shore, demonstrates the existence of the fresh-water stream. The San Gabriel River has the largest and most productive water-shed, as it obtains its supply

PUBLIC LIBRARY, RAYMOND AVE., PASADENA.

from the long chain of Sierra Madre and other mountains that face to the south, this being the direction from whence the greatest amount of moisture is condensed. The Los Angeles River is a small stream all through the summer.

OCEAN AND CHANNEL CURRENTS.

This portion of California has its climate modified by the marine currents: First, by those of the ocean in a general way, and secondly by the channel currents locally. Heat is brought to the American coast by two currents—these being the Kuro-Siwo or Japan stream

and the great circular North Pacific drift-current. Cold is imparted from the colder waters coming from the many cold, deep, ocean currents with which the Pacific abounds. In the latitude of San Francisco the southward-flowing return current of the Japan stream is joined by the easterly current of the great circular drift-stream; at this point some of the very cold waters of some of the deeper cold currents also come to the surface. (At the Farallone Islands, 35 miles westward from off the Bay of San Francisco, 42° F. is the constant annual temperature.) The admixture of all these streams goes to form the California current, which follows the coast as far south as Point Conception, where the submarine mountain chain, of which the Channel Islands form the crests, deflects the stream to the south and off the shore, which here turns abruptly to the east, so that abreast of the middle of the Southern California coast this cold ocean current lies nearly 100 miles to the westward of the shores of the mainland. The swiftly-moving stream and the deflecting winds, which further assist the wave-movement to the southward, form a suction or aspirating force that is exerted on the waters to the east of the Point. This movement results in forming a westerly-moving current in the Channel waters. This westward motion is followed by all the mass of waters lying between the mainland and the submarine chain of hills,—a formation that extends some hundreds of miles to the south; the ocean waters in the Channel required to keep up this westerly-moving current comes from the warmer waters of more southerly latitudes, where they are drawn into the southern end of the Channel by the aspirating force first exerted at Point Conception. From the deflection of the colder California current to such a distance off the coast, and the drawing up of the warmer waters of the South

to fill the Channel, it follows that the shores of its coast are bathed in a warmer sea-water than the rest of California; the shallower depths of the submarine valley that forms the bed of the Channel further assists in excluding the colder and deeper streams, as well as in keeping up the warmth of its waters. On the northeast shores of Santa Catalina Island the waters are remarkably clear, calm, and warm, the warmth being much greater than that of the waters on the shores of the mainland; fishes are seen swimming among the rocks and sea-weeds at a great depth. The tropical characteristics of the sea at this point and at the Bay of San Diego, due to the southerly source of the waters and to the peculiarly heating character of the land, which thereabouts abounds in hot springs, is in marked contrast to the chilly and bleak California stream—over 300 miles in width—flowing to the south, to the west of the islands. The islands of the inner tier have a much milder climate than those of the outer tier, and the easterly sides of the islands are milder than the west.

The peculiar meeting of arctic and tropical currents gives to the shores of San Diego an odd variety of sea-fauna, which is the best evidence of the widely different sources from whence the sea of the neighborhood obtains its waters. In regard to marine fauna, Prof. C. R. Orcutt observes that San Diego probably stands the first on the list in the number of recorded forms of marine life. "The San Diego fauna possess additional advantage, however, in not only having a fair admixture of northern types, but also in yielding a large number of forms belonging to the warmer waters to the southward." In the neighborhood of La Jolla—a sea-side resort with a cove with the sea-waves beating into deep and fantastic caves, made by wave-action into the face of the nearly

perpendicular cliff—the bright-hued, gold-tinted, and bright-red and blue fish can often be seen, with seals basking in the outer edge of the cove, while schools of whales or porpoises sport out at sea,—a queer mingling of the sea-denizens of the warm seas of the tropics and the dark-blue, cold waters of the arctic regions, bringing up simultaneous visions of the bright coral reefs and cocoa-nut palms of the South and the chilly glaciers and icebergs of the far North. As before said, these are conditions almost incomprehensible and irreconcilable when occurring together, and they must be seen to be appreciated. As stated by Charles Dudley Warner: it is incongruous that he should be looking at a date-tree while wearing his overcoat; and he is puzzled that a thermometrical heat that should enervate him elsewhere stimulates him here. "It is a fraud," he says, "all this visible display of summer, and an almost summer at that; it is really a cold country."

The effect on the climate produced by this peculiar condition of the ocean water is to give it a constancy of temperature. For further information concerning the ocean and bay waters and their temperature the reader is referred to a paragraph on the temperature of ocean water farther on, in which a comparative table is given, comparing the California Channel waters with those of the Atlantic and of the Pacific in Middle California.

TIDES.

The tides on the Channel shores are of the greatest regularity as to the limit of their rise and fall, owing to the entire want of disturbing elements in the shape of storms or any unusual winds. The spring tides rise 5.6 feet above average low-water mark, and the neap tides fall 4.2 feet below. The daily papers on the coast

are in the habit of publishing tide-tables; so that the tourist or invalid can readily ascertain the time of the

SOUTHEAST VIEW OF HOTEL DEL CORONADO, CORONADO BEACH.

lowest tide, when he may gather sea-mosses or other specimens of natural history belonging to marine life.

SEA-SHORE AND BEACH.

The sea-shores present many peculiar features, the most noticeable being a strange formation of a beach of large pebbles and small boulders at the mouth of the creeks and small rivers; the rocks brought down by the streams are thrown back by the sea-wave action and piled up with such regularity that it looks as if it were the systematic work of man. At different points of the coast are to be found many of those fantastic isolated results of wave-action on outstanding rocks, perfectly similar in every regard to the Pigeon Rocks near Beyrout, in Syria; at La Jolla, in the vicinity of San Diego, a high, perpendicular cliff has been worn by this ceaseless wave-action into a number of large, irregular, deep caves, which can be entered at low tide; these sea-caverns and the adjoining rocks are full of sea-mosses and marine plants, both easy to gather as well as to preserve. Santa Barbara, Santa Monica, Long Beach, Carlsbad, Pacific Beach, and Coronado Beach all have fine, hard, sandy beaches. At Coronado the beach-drive extends in a crescent facing the ocean to the southwest for a distance of 15 miles. At Carlsbad the beach-drive is one long stretch of over 20 miles. At all of these resorts there is good surf-bathing, and shore as well as deeper sea-fishing, either of which can be enjoyed at any season of the year. Boating and yachting are also much practiced, the absence of sudden squalls, high winds, or storms on this portion of the coast robbing this pastime of all dangers.

ISLANDS.

At a distance of from 20 to 70 miles from the mainland there is a chain of islands, disposed, as it were, into two tiers,—an outer and an inner tier. They are the crests of a submarine chain of mountains that par-

allel the coast and rise from 500 to 3000 feet above the level of the sea; the largest of the group are from 15 to 28 miles in length. These islands are resorted to by yachting, hunting, and fishing parties.

FAUNA.

The animal life of this region is denotive both of its southerly latitude and of the influence that is exerted upon its climate by the extensive cold current to the westward, and the almost continuous action of the westerly sweep of the winds. On the seas and its shores are found the gigantic sea-turtle and bright-hued fishes of the tropical seas, alongside of the seal, sea-lion, sea-otter, and whale of the arctic regions. On the Cortes Banks, in the full sweep of the cold California current, the analogue of the Newfoundland cod is in as plentiful abundance; nearer in-shore the tunny and sardine of the Mediterranean are found in equal profusion; the white-fish and rock, shrimp, lobster, crab, and clam of the Virginia bays and inlets are here as abundant and in as great variety; besides, these waters furnish an excellent quality of sea-bass, sole, mackerel, smelt, baracouta, redfish, and many more edible varieties of excellent flavor. Tons of abalone meat, it being the edible part of a large shell-fish, are yearly exported to China. On land there is the bear, deer, wild cat, lynx, hare, rabbit, squirrel, cayote, or wild dog; while the birds are represented by all varieties of ducks, geese, brant, quail, doves, as well as by all kinds of small birds and the birds of prey; the sea-gull, pelican, curlew, sea-snipe, and shags are very plentiful along the shores. On the desert a small land-tortoise is found that has a wonderful tenacity to life. The reptiles are also well represented. My friend, Dr. F. E. Blaisdell, has collected

CAVES AT LA JOLLA.

over 250 species of birds and over 5000 species of entomological specimens in the neighborhood of San Diego Bay region alone, which are a part of his large cabinet of natural history at his home at Coronado Beach. To the naturalist this section offers an endless amount of material for labor and interesting study, owing to the richness and numberless varieties of its fauna and flora.

FLORA.

Like to its fauna, the flora of the region partakes its characteristics from nearly every floral realm. Along its shores, and in such quantity as to act the part of an effectual breakwater to the wave-action, there is found,

LIVE OAK, ORANGE GROVE AVE., PASADENA.

at many places, a broad barrier of kelp or sea-weed, sometimes extending for miles in length. On the rocks and in the caves of the sea-shore, Mr. D. Cleveland has collected no less than 158 varieties of algæ, or sea-mosses. The various sorts of ice-plants, with their bright flowers, abound along the coast. The ferns are beautiful, and grow to perfection. Twenty-eight varieties have already been collected. C. R. Orcutt, the naturalist, has gathered specimens of 75 different varieties of grasses and 15 of malvæ. The rosaceæ, geraniaceæ, lichenes, leguminosæ, and ranunculæ, as well as the papaveracea, are found in a profusion of varieties. The region is the natural home of the labiatæ, or mints, to

which belong the sages, as well as of the century-plant and of the cacti. In the hills and mountains spice-shrubs, laurels, birch, walnut, oak, willow, sycamore, and pines abound, and in many varieties. On the desert and in the interior valleys, and, at times, even near the sea-shores, are the wild palm, with edible fruit; the Texas plum, mesquite- and screw- bean, yucca, and the Simmondsa, or edible goat-nut,—all plants which furnish fruits that sustain animal life. On the higher elevations, where the climate greatly resembles that of New England, the wild strawberry, dewberry, and thimble- or bush- mulberry are found in abundance during their appropriate season. In addition to its great wealth of indigenous flora, the Franciscan monks, who first planted the seeds of civilization on this coast, introduced the grape, fig, olive, the date of Arabia, the orange, lemon, lime, chestnut, and the fruits of semi-tropic Mexico and Southern Europe, and all the cereals have since then made this coast their natural home. No region can boast of a more rich or beautiful flora than that possessed by Southern California, and its hardy nature is strongly denotive of the vitality-inducing properties of the climate.

TEMPERATURE.

The coast, foot-hills, mountain, and desert all have their distinct and peculiar conditions of temperatures. Beginning at the extreme westerly limits of the region that is comprised within the California of the South, we first meet the outer borders of the seaward islands. The temperature is not here influenced by the latitude, but wholly by the cold character of the California current, which, as has been already shown, has a large admixture of deep sea-current waters of an arctic coldness. The sides of the islands that face the mainland are much

warmer. The inner tier of islands, as has been observed, have a much milder climate than the outer. The temperature of the coast itself is greatly influenced by the immediate topographical features, where deep or well-defined valleys are so situated as to produce a powerful aspirating movement from the sea to the inland regions. It is much warmer where there is no break in the coast-line of any consequence, and where no such aspirating force exists. On the islands the temperature is very even, and the range but small. On the shores of the mainland the equability is somewhat disturbed by the influence of the land, but it is still remarkably equable. The following table will give a comprehensive idea of the general temperature on the immediate coast:—

MEAN OF MONTHLY TEMPERATURE AT SAN DIEGO, CAL.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Taken from 16 years' average mean for each month	53.5	54.7	56.0	58.2	60.2	64.6	67.1	69.0	66.7	62.9	58.1	56.0
Mean at 7 A.M. for 1887 for each month . .	47.5	47.1	51.7	54.5	57.6	60.5	63.4	63.5	62.6	59.3	53.8	48.9
Mean at 3 P.M. for 1887 for each month . .	60.9	57.7	62.4	63.3	66.3	68.5	69.6	69.6	69.5	69.6	64.4	60.5
Mean at 10 P.M. for 1887 for each month.	54.6	53.9	57.5	59.1	62.3	64.9	66.5	65.4	65.0	64 6	59.3	54.5
Maximum for month, 1887	74.0	76.0	82.0	80.0	79.0	78.0	79.0	77.0	79.0	85.0	82.0	74.0
Minimum for month, 1887	38.0	38.0	44.0	44.0	48.0	54.0	60.0	54.0	58.0	50.0	44.0	36.0

The above means may be taken as a fair average of the temperature of the day, as the daily variation from one day to another is so slight that the mean in the three daily observations can be said to be the actual temperature daily at those hours. At Santa Barbara it is

OLD SAN DIEGO MISSION, FOUNDED 1769.

slightly warmer than at San Diego, owing to the coast at that point facing square to the south, and to a high hill that runs north and south to the west of the town. The sun's heat is there more powerful, and the coolness of the sea-breeze hardly perceptible; but for the rest of the coast the foregoing table may be taken as a fair standard. The maximum is reached, as a rule, at the hour that precedes the advent of the sea-breeze, and is of short duration. At the very moment that the land begins to become heated, the breeze is at once felt to come fresh and cool from the sea; so that anything like a prolonged existence of a heated temperature is utterly impossible. The afternoon temperature is cooler than that of the morning, owing to the above cause. By reference to the table, it will be seen that, even in the month of June, when the days are longest and summer may be said to exist, the heat of the afternoon is only 8 degrees greater than that of the early morning hour, while that of July and August is only 6 degrees higher. The coldest hour of the twenty-four is to be found at about 3 in the morning, and the warmest between 9 and 10 in the morning. The nights are always cool, as, after the hour of 10 in the evening, the temperature gradually declines until the minimum is reached, at the hour of the early morning, as above stated. At the hotels, all the beds are made up with a pair of thick, woolen blankets, with an extra quilt at the foot of the bed, to be used in case of need,—an additional covering that is often required by many. The habitual coolness of the atmosphere makes summer clothing too light for any comfort, and woolen garments are continually worn. Umbrellas or sun-shades are never required, as, owing to the sea-breezes, the heat of the sun is not noticed, nor is it felt. To one coming

from the eastern or middle regions of the United States, where either outside heat or overheated interiors are the customary temperatures that are experienced, that of this coast is at first found to be uncomfortably cool. Especially is this feeling intensified by the utter want of overheated interiors,—something that is sadly missed by the Easterners.

Europeans from the north of Europe experience the same discomfort, when they first arrive at the sea-side stations in the south of Europe, in the fall or winter months. This has been particularly observed among the invalids from the north of Russia or of Germany, who, although accustomed to a very rigorous climate, are, nevertheless, unable to bear the continued cool atmosphere of the Riviera without resorting to the box-stoves of their own native land. The Russian campaigns of 1812 fully demonstrated the fact that northerly people are much more sensitive to the extremes of temperature than those who have lived in a mild climate. The same sensations of uncomfortable chilliness are experienced by the Americans of the northern half of the States that lie to the east of the Rockies, who find their way into the mild and equable climates of the highlands of tropical and of semi-tropical South America, where 60° F. is about the constant temperature.

The highest maxima of the thermometrical readings on this coast are never due to purely natural meteorological causes, but to the results of the extensive forest- and brush-fires that spring up from accidental causes, in the mountains or on the plains, during the hottest portion of the summer, as in those localities the heat at that season is fully equal to that of any region possessing hot summers. The great heat from these fires rises and joins the westerly-going currents of overheated air that rise on

the desert to the east of the mountains. These move swiftly toward the sea, where, by losing a portion of their heat, they are enabled to descend to the level of the sea, where the current of air, yet warmer than usual, is as rapidly drawn back toward the land. That this process actually takes place there is sufficient and convincing evidence in the fact that, during the existence of the fires to the east, the westerly winds from off the sea have deposited the calcined leaf of the distant oak and other mountain trees to the seaward of the houses on the coast. At those times the heat, so artificially raised, is much greater than the sea can dispel; it, therefore, comes back to the land in the shape of a warm sea-breeze. The lower currents are sufficiently cooled in their passage over the ocean-waters, and receive sufficient moisture to produce such a modification of the otherwise hot condition of the atmosphere as to rob it of any excessive disagreeableness; as, otherwise, the sun-heat of the latitude, the great ground-heat, and the artificial heat additional from the fires would, but for the tempering influence of the sea, make it unendurable. These are the conditions that give to the temperature its greatest heat. The only other additional source of unusual heat is the prevalence of the "simoon," or desert-wind, which will be described under the heading of "Winds."

Regions with a constantly moderate temperature, standing in the neighborhood of 60° F., have, as a rule, a very rapid diminution of heat at about the hour of sunset. Some ten years ago, at my request, Dr. Hearne, then in charge of the government signal- and weather-station at San Diego, kindly instituted a series of detailed observations, to determine the actual condition of the atmosphere at that period of the day. This consisted of a thermometer-reading 60 minutes before sunset, at

Ostrich Farm, Pasadena.

sunset, and at 60 minutes after sunset, continued for thirty days. These readings gave the following respective means for the month: one hour before sunset, 62.6° F.; at sunset, 60.1° F.; and at one hour after, 60.8° F. The sensible change produced by the abstraction of the sun-heat as the sun reaches the western horizon is apparently much greater, as the body is then giving out instead of receiving heat; a process no more different here than it is found to exist in any locality with a constant moderately low temperature, and which should be guarded against in any part of the world, especially by the invalid class, who, as a rule, have no heat to part with. There is also, in common with all localities with a like temperature, a greater or less difference between a shade totally away from any sunshine and a sun-exposure. This difference is much greater than that which exists between sun and shade in more northerly latitudes, where greater ranges of temperature are found to exist, and where the summers are short and very hot. The reason for this is simple enough: in those countries the atmosphere is heated as a mass, and there is no persistent and active agent continually at work to reduce the temperature. The heating or cooling is there done *en masse*, and there is no way of escaping the extreme changes or ranges of temperature of either heat or cold,—as they may obtain the mastery. Here, however, the sun's heat and the coolness of the sea-breeze are always striving for the mastery, with the result of a compromise between the two warring elements, in the shape of a constant moderately low temperature. It naturally follows, however, that, wherever either the sun or the sea-wind obtains the undisputed sway, there the characteristics of the ruling element will make itself the most felt; it also follows that a person can, from the very nature of the

causes of these opposite conditions of temperature, elect that medium which he finds by experience to be the most congenial or conducive to health,—this election being as much at his choice as the temperature of the water which is used for the personal ablutions or for drinking purposes.

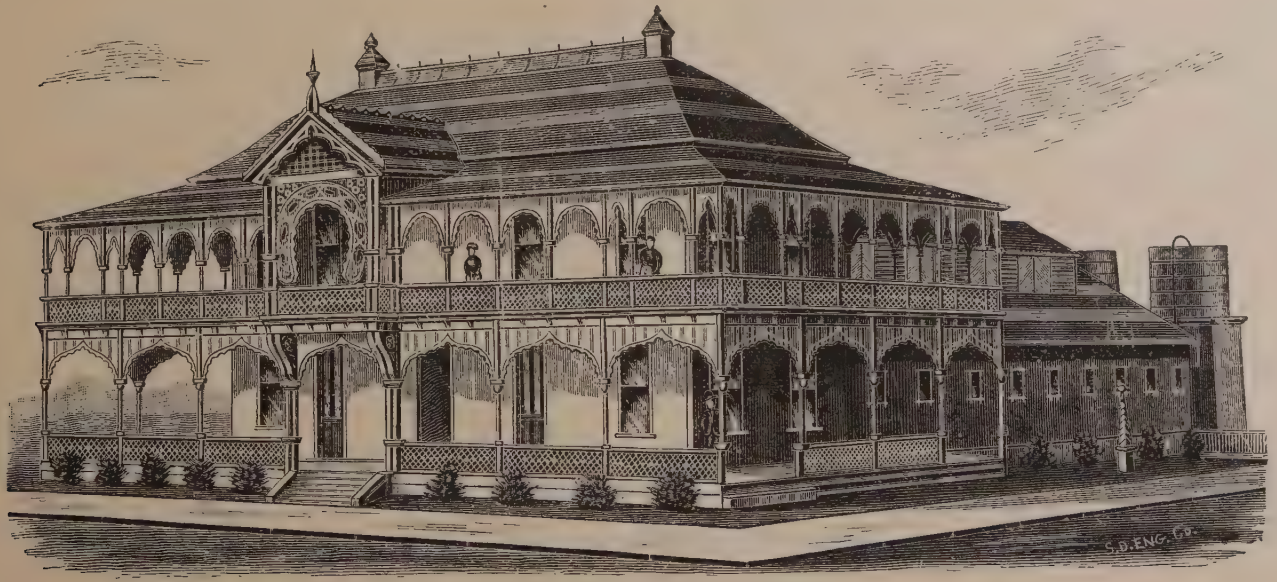
Aside from the important consideration of temperature, southerly exposures have another qualification of as great and vital import,—that of facile, easy, and natural

Grand Opera House, Raymond Ave., Pasadena.

ventilation. Although the prevailing winds are from the northwest, apartments that face to the southward are found to have a constant mild and agreeable breeze pouring in through the open windows; this air is warm, genial, and invigorating, and constantly renews itself throughout the apartment, and either at night or in the day is constantly carrying on its work of ventilation. The air of such southerly-exposed rooms does not become overheated during the day, but, on the contrary, owing to the free and ever-active ventilation, their air is actually

fresher in the day, and, strange as it may seem, even actually warmer at night. The cause for this greater equability at night is not so obscure as it would at first sight appear; the ground that faces the buildings which have an all-day sun exposure is naturally warmer from having absorbed heat all through the day. This heat it now gradually gives out to the adjacent atmosphere throughout the night; whereas, a northerly exposure has nothing that tempers the colder night-air, and during the winter rains there is the additional coldness, due to the humidity of the ground, making a northerly exposure less desirable. In such an exposure there is also lacking the well-recognized benefits to the maintenance of an equable night-temperature that arises from wall-heat. A well-located southerly exposure has, therefore, all the advantages that are to be derived from temperature, which has here been shown to produce equability and ventilation, the mural transmission of air being assisted by the extreme dryness and heat of the walls and by the difference in the temperature between the inner and outer air, as well as by the breezes, already mentioned, that come through the south windows. Westerly exposures are necessarily colder in the morning and hotter in the afternoon and evening. Easterly apartments are not so objectionable, as they are warmer in the morning and of a more equable temperature through the rest of the day, as well as the night, than those facing to the west. A south exposure should always be advised; next to this, an easterly; but a patient should, under all circumstances, avoid any place that is not subjected to the influence of the sun for a good part of the day.

From the description already given as to the occurrences of the maxima and minima of the temperature, and of the decidedly short time in which they are



HOT MINERAL-WATER BATHS AT ELSINORE, SAN DIEGO COUNTY.

present, and of the causes that originate them, it will be evident that anything like any great or sudden change of temperature is something of an impossibility, and that such a thing as a warm day being followed by a cold night, or *vice versâ*, is also something that does not occur. It is these possible even conditions of temperatures and utter want of variability that explain the entire absence of such diseases as cholera infantum or any of the acute abdominal affections, and of the like class of chest diseases. On the immediate coast the difference in temperature from month to month, or from one part of the year to another, is so slight that the coast may really be said to have no seasonal limit or periodical seasonal line of demarcation that is defined by temperature. Taking the months that are usually grouped into seasons elsewhere would give for the coast the following seasonal means:—

Spring, 58 degrees; summer, 68 degrees; autumn, 62 degrees; winter, 54 degrees. Many years' observation gives the mean annual temperature as 60.5 degrees, the mean annual maximum as 67 degrees, and the mean annual minimum as 53 degrees. All the above remarks on temperature are for the coast climate.

The following table will give a general idea of the comparative difference between the temperature of the sea-shores, inland valleys, and the desert. Monthly or yearly means have always been something obscure, unexplaining, indefinite; as places with the same annual mean may have an entirely different climate, and a locality may have a much hotter monthly day-temperature than one that gives a much higher monthly mean; so that a monthly mean is no index of what the day- or night- temperature may or may not have been. Ranges of temperature are fully as deceptive in their information.

TABLE OF MONTHLY AND ANNUAL MEANS AND LOWEST AND HIGHEST TEMPERATURES REGISTERED DURING THE YEAR 1888, IN SOUTHERN CALIFORNIA, TO WHICH IS ADDED THAT OF SANTA CRUZ, IN MIDDLE CALIFORNIA, FOR COMPARISON.

LOCATION OF STATION.	Distance from the Sea, English Miles.	Elevation above Sea-level, in Feet.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual Means.	Highest Observed.	Lowest Observed.
Sea-shore.																	
Santa Cruz			49.2	53.1	54.8	59.3	59.3	67.5	66.4	64.4	65.8	66.3	58.0	57.1	61.0	98	24
Santa Monica			56.8	58.0	57.2	65.3	64.0	68.0	76.7	74.6	72.6	67.8	60.5	55.8	64.8	91	39
Santa Barbara			48.4	56.1	54.8	62.6	62.8	70.7	72.5	69.0	67.0	65.0	59.6	55.8	62.4	82	30
San Diego		60	51.6	54.9	55.8	60.8	61.2	65.9	68.4	68.4	68.2	63.5	58.8	56.5	61.2	93	33
Inland Valleys.																	
Anaheim	15	. .	55 6	58.5	59.5	66.9	69.9	73.5	71.3	72.1	74.8	69.3	63.4	60.9	66.3	94	34
Los Angeles	15	293	50.0	54.4	55.1	61.9	60.8	67.5	67.9	67.6	68.4	62 0	57.2	55.2	60.7	99	31
Pomona	40	705	49.1	52.2	51.0	61.8	62.7	70.8	69.8	68.4	67.7	61.3	56.6	53.1	60.4	110	27
Colton	65	965	47.7	55.6	62.0	65.0	69.2	73.2	80.4	78.0	79.3	70.4	65.7	57.2	67.0	110	26
Desert of the Colorado.																	
Indio		20	47.8	60.3	62.3	75.6	74.2	89.7	96.9	95.4	93.6	79.8	65.0	55.7	74.7	112	22
Mammoth Tank			49.6	59.4	63.0	82 0	82.6	93.4	97.2	96.0	93.9	78.6	61.3	52.0	75.7	117	27

As an example: San Diego on one year had, on one day, owing to artificial causes, a temperature above 90 degrees, it being the only time during the year when it reached that point; and in many years it is only seen at 75 degrees once or twice in June, the same being said of 85 degrees in July and of 80 degrees in August or September. The table is of interest, however, as it shows the difference between the temperature of Santa Cruz, in Middle California, on the Pacific Ocean, and three other sea-side localities on the Channel shores of Southern California, and the annual distribution of heat on the coast, inland valleys, and desert. On the desert it must be observed that the nights, even in summer, are at times exceedingly cold, and at the same season the days are always of extreme heat, as it is a region of the most decided extremes at any season. The monthly mean, therefore, only shows that one month has been colder than another, without giving any idea of the actual state of the temperature at any time, or of the extreme range that is there experienced in the twenty-four hours in winter,—a range that is the analogue of the range between night and day in the Sahara of Northern Africa. This portion of the subject will be further explained under the heading of the "Valley Temperature."

It is to be regretted that the table is not more definite, especially in reference to the temperature of the interior and that of the desert,—the required material and data not being procurable. For instance, nothing in the table would suggest that in the desert, at the Yuma Station, in 1880, there were one hundred and eighteen days in which the temperature exceeded 100 degrees and twenty-eight days on which it exceeded 110 degrees; or of the extreme great range that may and does occur in the course of twenty-four hours between day and night. For

the first year in which regular observations were made by the United States Signal Service, at San Diego, the following were the minimum and maximum ranges of temperature that were registered. The same data for 1886 are subjoined for the station of Santa Barbara:—

MAXIMA, MINIMA, AND RANGES OF TEMPERATURE AT SAN DIEGO, CALIFORNIA, FOR THE TWO LAST MONTHS OF 1871 AND THE TEN FOLLOWING MONTHS OF 1872.

(*U. S. Signal-Station Observations.*)

	November	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.
Maximum during month.	78	81	73	68	71	74	83	83	75	86	80	87
Minimum during month	41	43	38	43	44	43	49	55	58	60	54	45
Extreme range during month . .	37	38	35	25	27	31	34	28	17	26	26	42
Mean daily range.	14	13	14	11	13	13	10	12	10	9	12	12
Maximum daily range	25	27	26	18	23	23	27	23	14	15	18	31
Minimum daily range	3	5	5	6	6	3	5	7	8	6	6	7

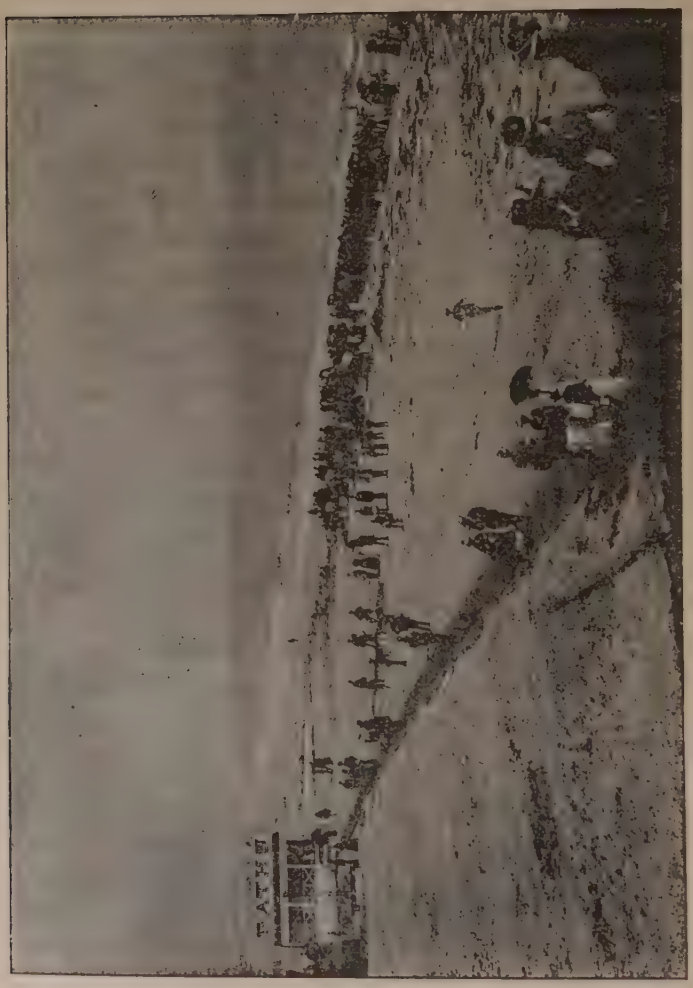
MAXIMA, MINIMA, AND RANGES OF TEMPERATURE AT SANTA BARBARA, CALIFORNIA, FOR THE TWELVE MONTHS OF THE YEAR 1886.

(*From the Observation of Mr. H. D. Vail, of Santa Barbara.*)

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Maximum during month	77	87	71	74	80	80	84	85	78	79	83	81
Minimum during month	35	42	34	38	40	48	52	53	51	42	38	41
Extreme range during month . .	42	45	37	36	40	32	32	32	27	36	45	40
Mean daily range.	18	21	18	18	21	16	19	20	16	19	25	19
Maximum daily range	28	38	28	33	30	27	30	29	23	34	34	34
Minimum daily range	6	10	5	4	13	8	10	12	6	4	12	5

From what has been said in relation to the ranges, it will be remembered that the days are of a uniformly gradually increasing warmth on the sea-side and inland

stations from sunrise up to the advent of the sea-breeze, or from thence on to the noon hour, at which time the maximum temperature is registered, and that the



Bathing in the Surf at Coronado Beach in January.

nights are of a uniform coolness. It thus comes that, in 1886, on the Channel coast, there were only 13 nights on which the thermometer did not fall below 60 degrees;

of these, 1 was in January, 2 in February, 3 in July, 6 in August, and 1 in September. Of the 13 nights, on only 3 did it reach 62 degrees; 8 out of the 13 the mercury not rising above 60 degrees. The benefits of such a night-temperature in inducing or allowing sound, recuperative rest is something that will be fully appreciated by all physicians. It also furnishes ample satisfactory reasons for the entire exemption that is enjoyed by this southern coast from all active intestinal or thoracic diseases, and why invalids or the enfeebled undergo such rapid and visible recuperation.

The following summary of temperature statistics is compiled from the government records of the observations taken at San Diego, and can be taken as illustrative of the climate of the Channel coast. It covers a period of ten years,—1876–1885, both years inclusive. The compilation was made by Mayor Douglas Gunn, by whose permission it is here used:—

During these ten years, embracing 3653 days, there were 3533 days on which the mercury did not rise above 80 degrees. The remaining 120 days were distributed as follows: In 1876, 8 days; in 1877, 12 days; in 1878, 10 days; in 1879, 19 days; in 1880, 9 days; in 1881, 7 days; in 1882, 4 days; in 1883, 23 days; in 1884, 13 days; in 1885, 15 days. *Only one hundred and twenty days in ten years in which the thermometer marked a higher temperature than 80 degrees.*

But the showing is still more remarkable. Of the total number of 3653 days, there were but *forty-one* days in which the thermometer rose above 85 degrees, but *twenty-two* days on which it rose above 90 degrees, but *four* days on which it rose above 95 degrees, and only *one* day on which it rose above 100 degrees. The highest temperature recorded during the whole period

of ten years was 101 degrees, on the 23d day of September, 1883.

During these ten years there were never more than *two* days in any one month on which the mercury rose as high as 85 degrees, except June, 1877, 4 days; September, 1878, 5 days; June, 1879, 3 days; September, 1879, 4 days; October, 1879, 6 days; and September, 1883, 4 days.

On not a single day during the ten years did any unusual warmth continue more than a few hours, the *highest* MINIMUM for any day being only 70 degrees, on *five* of the 3653 days.

From the above it will be evident that exhaustive heated terms do not occur on this coast; the summary in regard to cold for the same period of ten years shows an equal tendency toward equability, as out of the same 3653 days there were 3560 days on which the mercury did not fall below 40 degrees. Of the remaining 93 days, there were only *six* on which the temperature fell below 35 degrees, and only *two* on which it registered as low as 32 degrees, and *none* on which it fell below that point. On no day did the mercury remain below 40 degrees more than one or two hours, and this in the period between midnight and daylight, the *lowest* MAXIMUM for any day being 52 degrees, on *four* of the 3653 days.

The next table is a comparative exhibit of the Channel-coast temperature, in comparison with that of other points in the United States, showing the highest and lowest temperatures that were registered at the different stations within a given number of years. It will be well to explain that wherever the terms "maximum," "minimum," "highest," and "lowest" are used, they refer only to the readings of the self-registering

CHANNEL-COAST TEMPERATURE, IN COMPARISON WITH THAT OF OTHER POINTS IN THE UNITED STATES.

LOCALITY OF STATION.	No. of Years of Observation.	JAN.		FEB.		MAR.		APRIL.		MAY.		JUNE.		JULY.		AUG.		SEPT.		OCT.		NOV.		DEC.	
		Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
New York	13	64	*6	69	*4	72	*3	81	20	94	34	95	47	99	57	96	53	100	36	83	31	74	7	66	*6
Charleston, S. C.	12	80	23	78	26	85	28	87	32	94	47	94	65	94	69	93	69	94	64	89	49	81	33	78	22
New Orleans, La.	13	78	20	80	33	84	37	86	38	92	56	97	65	96	70	97	69	2	58	89	40	82	32	78	20
Pensacola, Fla.	4	74	29	78	31	79	36	87	24	93	47	97	64	93	64	93	69	93	57	89	45	81	28	76	17
Jacksonville, Fla.	12	80	24	83	32	88	31	91	37	99	48	101	62	104	68	100	66	98	56	92	40	84	30	81	19
Newport, R. I.	2	48	2	50	4	60	4	62	26	75	33	91	41	87	56	85	45	77	39	75	29	62	17	56	*9
Denver, Colorado	12	67	*29	72	*22	81	*10	83	4	92	27	89	50	91	59	93	60	93	51	84	38	73	23	69	1
San Francisco, Cal.	12	69	36	71	35	77	39	81	40	86	45	95	48	83	49	89	50	92	50	84	45	78	41	68	34
Los Angeles, Cal.	6	82	30	86	28	99	34	94	39	100	40	104	47	98	51	100	50	104	44	97	43	86	34	88	30
San Diego, Cal.	12	78	32	83	35	99	38	87	39	94	45	94	51	86	54	86	54	101	50	92	44	85	38	82	32

An asterisk (*) placed above a figure denotes below zero.

thermometer,—that being the actual extreme temperature that was reached in the twenty-four hours, and not the mere temperature reached at the regular observation hour or at any other specified time. The preceding table, taking in the period from 1872 to 1883, taken from the annual report of the Chief Signal Officer, shows the highest and lowest temperatures recorded since the opening of stations of the Signal Service at the points named, up to and including the year 1883.

TEMPERATURE OF THE SEA-WATER

The following table of the temperature of the sea-water at San Diego and at Santa Barbara, showing the equable temperature of the Channel waters and the comparative temperature of the ocean waters on the shores of Santa Cruz, on the ocean, which lies a short distance to the south of San Francisco Bay, in Middle California, as well as with the temperature of the Atlantic Ocean at Newport, R. I., will give the reader a comprehensive idea of the great equalizing element that is the cause of the wonderfully equable climate for which this part of California is so justly celebrated, besides furnishing interesting comparative information. The table was compiled by Dr. Walter Lindley, of Los Angeles:—

COMPARATIVE TEMPERATURE OF SEA-WATER.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Santa Barbara Channel Waters.	60	61	61	61	61	62	64	65	66	63	61	60
Ocean at Santa Cruz	52	58	52	57	57	58	60	60	60	56	55	53
Atlantic at Newport, R. I. . . .	32	32	34	43	52	62	66	70	65	58	44	36
Atlantic at New York	34	34	38	. .	59	67	70	. .	69	52	47	39
Atlantic at Charleston, S. C. . .	52	52	60	67	75	79	85	84	79	72	64	54

SAN GABRIEL MISSION.

The two last lines of the comparative table are added to exhibit the temperature of the Atlantic in more southerly latitudes than is shown in Lindley's table. Charleston, in South Carolina, is on the same latitude as San Diego, in California, and the figures given indicate the means. The range is at times considerable for an ocean water. In New York the range is much greater, the highest temperature reached at the latter locality at fifteen feet below the surface during the year being 75° F. and the lowest 30° F.; at the Charleston station the highest being 87° F. and the lowest 49° F. On the California coast the water-temperature has but a very slight variation, even for the year, and the figures in the foregoing table for the Channel and for Santa Cruz need not be considered as the mean, as it is intended for the stations on Atlantic borders; but they may be taken for the actual temperature, the transition from its minimum of 60 degrees to the maximum of 65 degrees being made with a slow and gradual regularity. There is simply a gradual diminution of warmth in the waters from the middle of September to the middle of December, and as gradual an increase from the middle of January to September. In the Bay of New York the water may, and often does, reach a lower temperature during the month of June than is experienced at any time in the winter season on the California coast, although it may exceed the Pacific waters by 12 degrees before the end of the same month. The remarkable equability of the Channel waters will be more appreciated if we look to the opposite angle of the United States—at Key West, Florida—where its latitude and the proximity of the Gulf Stream would induce a belief that an unusual equability existed; such a condition does not, however, exist; in January it may fluctuate between 60 degrees

and 70 degrees, and in June between 81 degrees and 92 degrees, while in March it may go from 65 degrees to 82 degrees. It can easily be understood how sea- and surf- bathing is practiced at all seasons on the Southern California coast.

TEMPERATURE OF THE VALLEYS.

Further inland the temperature changes. It partakes more of the land variability and is less influenced by the sea. The following table of comparative thermometric readings for the early morning hour and the afternoon, taken at the sea-shore and in the interior, shows that on the coast the mornings are warmer and the afternoons cooler than in the foot-hills, denoting colder nights and warmer days inland:—

INLAND AND COAST TEMPERATURES COMPARED.

TEMPERATURE.	January.	February.	March.	December.
Los Angeles, 7 A.M.	46.5	44.5	49.7	46.4
San Diego, 7 A.M.	47.5	47.1	51.7	48.9
Los Angeles, 3 P.M.	65.2	58.1	70.7	61.8
San Diego, 3 P.M.	60 9	57.7	62 4	60.5

The city of Los Angeles is situated in the San Gabriel Valley. It is about 20 miles from the ocean and at an elevation of 300 feet above sea-level. Its highest temperature occurs just before the advent of the sea-breeze, which is here some two hours later than at San Diego. As these hours are those in which the sun approaches its meridian, that part of the day is consequently much warmer than on the coast, and during these hours the ground becomes much more heated,—a process that later assists in keeping up a higher temperature,

even after the arrival of the sea-breeze. The nights—especially the latter part—are always cool and refreshing, and the minimum temperature is always reached during the early morning hour. The following table exhibits the monthly means of four daily observations, and may be taken as a fair representation of the climate that is met in the valleys at the base of the foot-hills:—

MONTHLY MEAN TEMPERATURE AT LOS ANGELES, TWENTY MILES INLAND.
(*From Private Observations by Mr. Broderick.*)

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Sunrise	40	41	40	53	56	61	66	65	61	59	49	47
9 A.M.	55	56	60	66	65	70	74	75	75	74	67	57
3 P.M.	64	64	69	73	71	77	80	81	85	79	69	62
9 P.M.	50	48	54	57	60	64	67	69	67	62	57	51

The effects of temperature have been mostly studied by climatologists in the conditions that they are encountered in the Eastern States or in Europe, where the minimum for the twenty-four hours is as liable to occur at high noon as soon after midnight. The extent of the thermometric range, under such conditions, is a matter of great moment. Here, however, the conditions are entirely different; the maxima and minima arrive at stated hours, and can be looked forward to with certainty to appear, each at its appointed hour of the twenty-four. Here, in the interior plains and valleys, the maximum comes in the middle of the forenoon and the minimum soon after midnight; so that were the range even greater than it is found in some very variable localities, the manner of its occurrence and its regularly-known time of arrival robs it of its dangerous after-effects, that are such a prolific source of disease and death elsewhere.

By permission of
athorn Pacific Company.

An illustration will help to make this point clearer: To the north of the San Fernando Mountains the Southern Pacific Railroad descends into a large valley formed by the coast range and the Sierra Nevada Mountains; in the summer the heat is simply infernal during the day, but at night the coolness is most agreeable. In journeying from San Diego to San Francisco I have always so timed my departure so as to pass the night instead of the day in the valley, where, in spite of its more than tropical heat of the day, such a thing as a hot night is unknown. (With all its great heat and cool nights, this valley, over 300 miles in extent, enjoys the best of health, and cases of heat-exhaustion, sun-stroke, or hydrophobia are unknown.) The following table of temperatures is from the United States Signal Service tables taken at Los Angeles, and exhibits the mean monthly maximum and minimum temperature for one year:—

Table of Temperatures at Los Angeles.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Monthly mean . .	54 1	54.6	55.8	58.0	62.0	64.7	71.1	70.0	69.8	63.4	62.0	55.3
Maximum for month	93.0	87.0	93.0	80.0	86.0	81.0	72.0	71.0	76.0	80.0	89.0	81.0
Minimum for month	55.0	56.0	52.0	43.0	45.0	36.5	37.0	41.0	41.0	41.5	47.0	47.0

Of the above, the mercury only reached as low as 37 degrees twice in January; 38 degrees twice; between 43 degrees and 45 degrees on ten days; from 46 degrees to 50 degrees on eleven days, and from 51 degrees to 53 degrees on five days. These low temperatures, it has already been explained, occur after midnight, while on two days the maximum was 58 degrees; 60 degrees

once; twice 61 degrees; twice 66 degrees; three times 62 degrees; 63 degrees on six days; on four days 64 degrees; on four days 65 degrees; on three days, 67 degrees; once 68 degrees; twice 69 degrees, and once 72 degrees. On the day of the highest maximum the minimum was 51 degrees; in June the highest reading reached on fourteen days was between 69 degrees and 75 degrees; one day at 80 degrees, and only once 81 degrees; in July eleven times it went to between 76 degrees and 80 degrees; from 81 degrees to 85 degrees on eleven other days; on five days from 86 degrees to 90 degrees, and 91 degrees, 92 degrees, 93 degrees each on one day, on which days the minimum was 70 degrees, 70 degrees, and 67 degrees, respectively.

The above detailed explanation is made to show that the extremes of temperature are not of frequent occurrence; and when it is remembered that the maximum is only reached before the advent of the sea-breeze, or soon thereafter, after which the temperature becomes quite agreeable, and that the nights are always cool, it will be easy to understand why extremes in California are entirely different in their effects, or so much more endurable than elsewhere. High California temperatures are unique in their immunity from evil results; a temperature which in St. Louis or New York is attended by great prostration and an excessive mortality is, in California, a matter of but little concern, and with no resulting detriment to health or life. I have walked about the streets of Los Angeles in an atmosphere where it was 108 degrees in the shade, the great heat being due to surrounding brush-fires on the neighboring hills and plains, and have seen business and labor go on without interruption, ladies and children shopping,—all oblivious of the really unusually extreme high temperature but for the ther-

mometrical registry. The greater heat is noticed, but the constitutional effects would never denote its extreme range. Those hot, enervating days and sweltering, restless nights, the accompaniments of the summers of the great river-valleys of the East and West, are no part of California's climatology.

TEMPERATURE OF THE MOUNTAINS.

The varying altitudes give a number of greatly differing temperature-belts, even in June, from the semi-tropic climate of the foot-hills to snow and Alpine weather. It is only a short journey, as snow rests on some of the higher mountain-crests all the spring and into the summer. On medium elevations the seasonal temperature greatly resembles that of the highlands of New England, the atmosphere being only drier; the fruits and other productions are also the same as those of the far East. Some ten years ago, on a Christmas, I left San Diego, with its balmy air, bright orange-groves, flowers, and semi-tropic vegetation, to attend some wounded men who had been injured in an affray in a mining-camp on the eastern slopes of the mountains, at an elevation of 3000 feet; very cold winds were encountered coming from the northeast; a little higher, and snow was reached. Arriving at the summit of the pass, at 4500 feet, the village was found enshrouded in snow and ice; tubs of water, pumps, and ponds had all been frozen solid; the sharp snapping and loud cracking of starting-boards was to be heard on every hand, and a cold blast, filled with finely-pulverized snow, was sweeping through the street that few cared to face; a short descent toward the east and the change was very suddenly made into a milder atmospere; at the camp, some distance down, it was summer—even warmer than at San Diego.

EATON CANYON. PROPOSED ELECTRIC ROAD TO THE SUMMIT OF MOUNT WILSON, NEAR PASADENA.

(By permission of the "California Illustrated Magazine.")

This extreme weather at that altitude is not of frequent occurrence, as I have only known it to happen once during the eighteen years that I have resided here. Cold weather, snow, and ice descend much lower on the western than on the eastern slopes of the mountains. As a rule, the summers are cool and the winters mild and of short duration, as the sea-breeze (unless overcome by some great disturbance of the upper aërial currents, as was the case in the winter incident just mentioned), that has traveled over the warm ground of the coast and foot-hills, sweeps through these passes and mountain-crests on its way to supply the demands of the desert. At Campo, in the mountains, in 1877–78, the Signal Service registered 13 degrees one night and 20 degrees on another in January, fifteen of the others being above 32 degrees, with 47 degrees for the coldest day; range for same month being 56 degrees and of 65 degrees for August, with eighteen nights in August when it fell below 47 degrees, four of which were below 40 degrees, one being as low as 35 degrees.

DESERT TEMPERATURES.

The desert atmosphere is to be found in its greatest degree of heat on the west side of its extent, and immediately under the mountains that form its western boundaries. The heat at these points at times is more than terrific, although, singularly, not in any degree as a temperature of 90 degrees is in New York; it is simply a burning heat, and no more. Temperatures of 140 degrees and over have been observed here. The stations of Indio and Mammoth Tank, whose temperatures have been given in a previous page, are not in the region of this great heat, as they are on the railroad that crosses the desert from its southeasterly corner to its northwest-

erly, where the gap in the lower range of the hills assists in materially lowering the temperature, so that the stations or the road are not in the hottest portions. The stations are built with a double roof, with an ample open and free space between the two so as to protect the interior from the great heat of the sun. At Mojave, a Southern Pacific Railroad junction on the northern boundaries of Southern California, the arid air of the

THE BEACH LINE OF AN ANCIENT LAKE IN THE DESERT.

desert of the Mojave is fully experienced, the means for June, July, August, and September being, respectively, 73, 81, 85, and 93.9 degrees, with a maximum of 115 degrees and a minimum of 16 degrees—these being for the year 1886. This station is at an elevation of 2751 feet, and situated on the summit of the pass in the mountain chain that stretches across from east to west to divide Southern from Middle California. This bleak, wind-

swept, extreme-temperatured locality has an annual mean of 66 degrees, which is only mentioned to show how useless the information amounts to that is conveyed by the term "annual mean." Jerusalem, Malta, Corfu, and Palermo have about such a mean, but half an hour's stay at Mojave will convince the greatest stickler in favor of the term "annual mean" that the "mean" of several places may be alike, but that there the analogy stops; it may even do so in every other particular, even down to the temperature, constant, daily, or that of night.

In a communication in reference to the high temperature of the Colorado Desert, made to the writer by Lieutenant W. A. Glassford, of the Signal Service, an accomplished meteorologist who has carefully investigated the peculiar conditions of the Pacific-coast climate, he says: "There is one subject, however, that I should like to see you or Dr. Widney discuss, and that is the reason why the heated places, like Yuma, for instance, or any of the desert places, do not cause discomfort in the heat running up to 120 degrees or thereabouts. It is usually laid to dryness; in fact, I have, in a paper, assigned this cause, but it does not go to the bottom of the matter, as I would like, from a physical point of view, such as a physician can do. As I said, it is the sensible or wet-bulb thermometer that affects the system, and I found the average wet bulb at Yuma, at the hottest time of the day, to be about 30 degrees below the exposed, or, with a temperature of 115 degrees, the sensible was 85 degrees. At New York, on the contrary, the sensible or wet-bulb temperature was, in heated periods, above that of Yuma."

Yuma is situated on the banks of the Colorado River and on the edge of the desert, and, although the hottest place in summer that there is in the United States, it is

free from any of the diseases or accidents resulting from heat. My friend, Dr. R. J. Gregg, in speaking of this subject, says that the proposition that malaria is a product of great heat and soil-moisture combined does not hold good as to Southern California, as he has seen personally, on the low lands near the mouth of the Colorado, a heat that made the low, marshy lands fume, where the natives merely make a hole in the moist ground with their toe, insert a grain of corn or any other seed, and,

A Mirage on the Desert.

presto! the plant appears in a marvelously short space of time, and where the combined heat and moisture causes the flax to attain such a size that he has seen horses tethered to one of the stalks; and yet, with all this combination of great heat and swamp-moisture, rapid growth of vegetation and necessary consequent decay, he tells the writer that he knows of no region so remarkably free from either intermittent, continued, or paludal fevers. The same observations have been practically made to the writer by his classmate, Dr. L. Y. Loring,

and Dr. Semig and Dr. Reed, all of the U. S. Army, and all of whom have served at the army-post at Yuma.

SUMMARY OF THE SUBJECT OF TEMPERATURE.

This part of the subject has been purposely long dwelt upon and fully explained in detail, as temperature may really be taken as the fundamental stone of medical climatology. It is temperature that has kept civilization within certain geographical limits; it is temperature—and that alone—that allows of free ventilation, which is the real and only safeguard against phthisis. The researches of Hirsch, Bennet, Lombard, Müller, Schröter, Kuchenmeister, Lindsay, Kolb, and others have demonstrated the fact that occupations such as are in-doors, in proportion to the impediments that they place to ventilation, and in proportion that they facilitate the breathing of a vitiated air by previous respiration, just in such proportion they tend to develop or to produce phthisis in the human subject.

Perfect ventilation is impossible where the rigor of the climate and sedentary occupation require that all of the cold, external air be excluded and all of the internal warmth of the rooms be retained, that the operatives may be in temporary comfort; it is this that explains the presence of phthisis in the Swiss or Bavarian Alps, where it exists in proportion to the number of their people who are engaged in confining, industrial pursuits; it is this same confinement and consequent lack of ventilation that has caused so much consumption in the great mass of people congregated in our large industrial centres, where it is further propagated by the infectious nature of the disease, where the population have to sleep in close rooms, live in badly-ventilated apartments, sit in unventilated churches or

By permission of
Southern Pacific Company.

SCENES AT AND NEAR YUMA.

schools, work in close offices or shops,—there phthisis can always be looked for, regardless of elevation, atmospheric humidity, amount of rains, fogs, thunder-storms, or any other atmospheric condition. On the other hand, all of the localities that have been celebrated for their peculiar exemption from phthisis will all be found to owe the immunity to an equable temperature, an atmospheric condition that allows of free and constant ventilation at all times and under any and all circumstances; there phthisis will not be found either at sea-level or at 10,000 feet elevation, be it a dry or a moist air, a compressed or a rarefied air.

This has ample verification on the sea-shores of California at sea-level and on the high plateaus of the Mexican, Colombian, and Peruvian mountains, in either of which countries the people carry the natural and unavoidable ventilation to such a point that they may literally be said to live and sleep out of doors. This solution has always appeared very simple to me without searching for any other specific cause, either in the barometric pressure, atmospheric constituents at different levels, amount of sunshine, rain-fall or fog; as it is a well-established fact that many consumptives have fully recovered by simply making a change to an out-of-door life from their former confining and free-air-prohibiting occupation. On the other hand, it is a well-known fact that it often happens that, where persons have given up an out-of-door life for one of confinement, phthisis has rapidly developed. Arab or Egyptian prisoners, the imprisoned inmates of Eastern harems, the freshly-imported slave from the south to the north of Africa, taken from his free, out-of-door life to live in houses, and the Labrador fishermen who leave their well-ventilated spruce huts for modern, close houses on the

St. Lawrence, or the savage who gives up his nomadic life for civilized homes, are all eloquent examples of what the want of a free and constant ventilation will do for mankind.

To fully carry out that perfect ventilation which is an imperative necessity to health and life, the nature of the climate must be such as will allow it to be done in an automatic or self-adjusting manner, as otherwise it will not be done; living in unventilated apartments becomes such a habit that when once established it is hard to eradicate. The stupefying and life-slowing effects of a foul and vitiated, close atmosphere seem to become, after a time, a part of the physical existence and a necessity with many; so much so that they become positively uncomfortable in fresh air, just as their opposites, the South American, will live in an atmosphere of 60 degrees with all the doors ajar, day or night,—a temperature which, strangely enough, would not be long borne by Europeans to the north of the 46th degree of latitude, nor by the North Americans north of the 38th, without great discomfort and the closing of doors or the aid of artificial warming, a degree of sensitiveness being established, in these two classes of people, by the extremes of temperatures to which they are subjected, making 60° F. too cold for them.

As strange as it may seem, the races of men living on the Mediterranean shores or in the equably-climated parts of Europe are better able to stand an extreme cold temperature than those who have been living—themselves and a long line of previous generations—under the influence of great ranges and variability of temperature,—facts well established by the observations of Baron Larrey during the campaign and retreat of the Grand Army, in 1812. Lieutenant Schwatka, the Arctic ex-

plorer,—a gentleman whose youth was passed on the Pacific coast, with its mild climate,—has informed the writer that, during one of his Arctic journeys, in an extreme degree of cold, and when the supplies had given out and his Esquimau escort were exhausted and perishing for want of food, he started out for assistance, making the extraordinary journey of 82 miles in twenty-four hours, over snow and ice, to procure the required aid. But for the superior endurance of a man nurtured in a mild climate, and better able to withstand the rigors and privations of their own clime, the Esquimaux would have all perished.

In Southern California it is never necessary to close the houses, either to exclude the heat of summer or the cold of winter. During the years in which no extensive mountain-fires occur or the hot simoon of the desert does not pour over the mountains from the East, the highest temperature experienced on the Channel coast does not exceed 82, 83, 84, and 85 degrees, as was the case in the years '73, '80, '81, '82, and '86; and as to cold, the wall-heat in a properly-constructed house that has been absorbed and accumulated through the long day's exposure to the sun of the latitude is fully sufficient to maintain the interior temperature at the moderate point throughout the coldest night that the coast is liable to experience, as by sunrise on the next morning the warming process is resumed. Families have lived for several years—my own being of the number—with wide-opened windows, without awnings in summer or fires in the winter, in the greatest of comfort, showing the ease, practicability, and comfort with which free and constant ventilation can be practiced in this climate.

California meteorology can in no way convey to the outside world any idea of the climate as experienced by

CHILDREN IN OPEN-AIR SCHOOL.

the senses. As observed by Charles Dudley Warner, in "Our Italy," "It is impossible to give an Eastern man a just idea of the winter of Southern California, who, while gazing on gardens laden with tropical plants clothed in their rich and luxuriant foliage, or on the date and banana ripening in the bright sun, and on the strawberries of his warm months which here are being gathered in midwinter, cannot understand why he needs an overcoat. The ordinary Easterner has not noticed the fact that a temperate temperature of 60° F. is something that he is a stranger to, and that, although such a temperature is called temperate, to those unaccustomed to it it is positively chilly; and to the Easterner coming here with the expectation of finding the proverbially warm climates of the tropics nothing but disappointment will result. Health does not demand either the summer heat of the East or the great artificial heat of the houses of those regions, which usually is raised above 75° F.; whenever the outside temperature falls to 60 degrees or thereabouts, as observed by such competent observers as James Henry Bennet, of Mentone, the temperature of winter that has been found most congenial to either the well or the sick has been the temperature of from 55 to 60 degrees; and with such a temperature fogs, mists, or rains are in no way harmful, even to the invalid. As observed, this temperature is not an agreeable one for those accustomed to extremes, and many will perpetrate the blunder of housing themselves before a hot stove in a close room; but the wise will simply clothe themselves properly in warm woolen garments, protect their feet with sensible shoes, and breathe the cooler air.

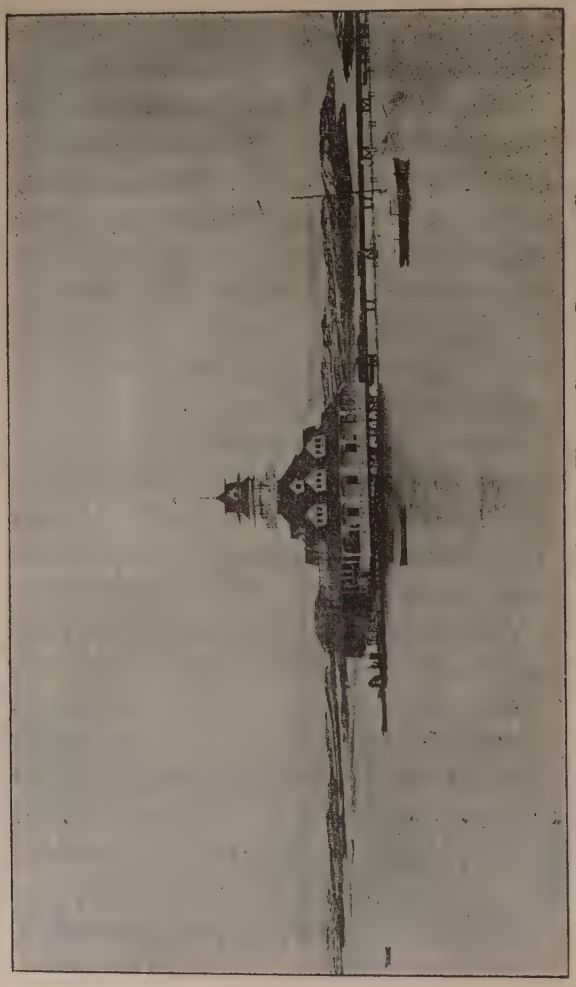
"The Chinese are a very peculiar people, and have many odd ways. They are even said to be in a state of

senile civilization, no longer able to make any forward move; but in this regard—how to weather the weather—we can learn something from that nation. China has a changeable and extreme climate; the aged, as well as many in their prime, sleep on ovens made of brick, which maintain their heat throughout the night; their houses are open, and, like the South American, the Chinaman never will sit in an apartment with closed doors. Draughts and air-currents affect neither the Peruvian, Colombian, or the Chinese mandarin; but all these people have the incomprehensible habit—to an American—of sitting shawled or overcoated in their apartments. A wealthy Chinaman generally has a supply of fur-lined robes with which to accommodate each guest, so that while at a Chinese private reunion, if the temperature should suddenly fall, a servant soon appears with a collection of furry coats, vests, and tippets, which are passed around to each guest something like napkins are passed around at one of our afternoon teas. There is one thing that the barbarian will not do, however,—something our Americans are continually doing, with great persistency,—cram their guests' lungs full of foul and over-respired air. People should not forget that it is all-important to keep the body warm,—something that can be done with appropriate clothing,—but that if we wish to be well and keep healthy we must breathe fresh air, and that air of a temperature of 55 degrees or 60 degrees is not too cold for breathing purposes, even if disagreeably cold to the body surface."

WINDS.

The winds of this part of California, like those for the rest of the Pacific coast, are from the west; the following brief summary will give a general idea of their direction,

frequency, and velocity, the data having been compiled by Dr. W. M. Chamberlain, of New York: "Out of 14,612 consecutive observations at San Diego, 878 were reported



Coronado Boat-House and Hot Sea-Water Baths, Coronado Beach.

calm; 1730 were reported north wind; 1044 were reported south wind; 2879 were reported easterly; 8146 were reported westerly; and the mean average velocity

5.9 miles per hour as compared with 7.7 miles per hour at New York and 15.8 miles per hour at Cape Hatteras."

In regard to the velocity and as evidence of the constant mild character of the winds of the coast, it may be mentioned that, some eight years ago, the U. S. Army Signal Station at the port of San Diego returned to the department all of its sets of cautionary signals, consisting of the flags, lanterns, and other apparatus which are usually hoisted as a warning to mariners in case of approaching storms, after having had them on hand for as many years without having had occasion to use them once.

During the first year's observations at the Signal Station at San Diego, out of 974 regular observations, 511 gave westerly winds; calms, 164 times; southerly winds, 131; southeast winds, 26; east winds, 44, and from the northeast 98 times; the north wind was observed 124 times; the easterly and north winds are the night- or land- breezes. The sea-breeze comes with the greatest regularity at its accustomed hour in the forenoon, and moves inland until evening, when there is usually a season of calm; after dark the evenings are always very pleasant, and are never cold, as the coolness does not appear until the advent of the land-breeze, which arrives later in the night. It is this sea-breeze that sweeps inland in a gentle current, flowing at the rate of 6 or 8 miles an hour, coursing over hill and plain, or up through the valleys, and finally pouring down over the mountains into the great basin of the Colorado Desert to the east, that is the carrier of the marine coolness to this semi-tropic land, and the factor of the exceptionally cool summers that this coast enjoys.

Storms come from the southerly points of the compass,

but never attain any magnitude. There is, however, the desert wind, which here is known as the "norther" or the east wind,—the only disturber of all this meteorological symphony,—a very disagreeable wind while it lasts, due to some perverted action in the desert atmosphere; it comes from the desert, and pours through the passes and over the mountains; it is accompanied by a sudden rise of the temperature, great diminution of atmospheric humidity, an increased electrical condition of the air, and, strange as it may seem, it produces no barometrical disturbance or serious results; it is an occurrence that comes once in the course of a few years.

RAIN-FALL AND RAINY SEASONS.

The winter is, in California, the season of rain; but all winters are not rainy seasons, as it happens, now and then, that there are winter seasons nearly as dry as that of summer. In California there are what are called the medium, dry, and wet seasons; agriculturally speaking, the good seasons are those with a little more than a medium rain-fall, and where it comes down slowly. The following tables will give an idea of the rain-fall for the region and of its distribution by months; the first table gives also the average fall of rain by the month for sixteen years, and also the monthly distribution, as an example of each of the dry, very wet, and medium seasons:—

AT SAN DIEGO, ON THE SEA-COAST—MONTHLY INCHES OF RAIN.

AVERAGE PER MONTH.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Total.
16 years . .	0.03	0.19	0.04	0.44	0.73	2.09	2.05	2.33	1.55	0.93	0.41	0.06	10.95
1876–77 . .	0.03	0.06	0.03	0.08	0.04	0.15	1.05	0.18	1.44	0 26	0.43	. .	3.75
1883–84 . .	. .	. .	. .	2.01	0.20	1.82	1.34	9.05	6 23	2.84	2.17	0.31	25.97
1888–89 . .	0.01	. .	0.04	0.26	1.83	2.84	1.72	1.80	2.20	0.19	0.03	0.10	11.02

The second table gives the amount of rain by the month for an extremely dry and one extreme wet season at Los Angeles:—

AT LOS ANGELES, IN THE INTERIOR VALLEYS.

AVERAGE PER MONTH.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Total.
1876–77 . .	. .	. .	. .	0.40	. .	. .	3.84	0.01	0.83	0.26	0.30	. .	5.28
1883–84 . .	. .	. .	. .	1.42	. .	2.56	3.15	13.37	12.36	3.58	0.39	1.39	38.22

There are, however, exceptional years, when even January may be a very dry month. January, in 1872, had only 0.44 inch of rain; that of 1869, 0.61 inch; that of 1880, 0.52 inch; that of 1884, only 0.35 inch, while January of 1886 had only $\frac{4}{100}$ inch of rain; on the other hand, August, which is usually a rainless month, had, in 1873, nearly 2 inches of rain.

The third rain-table exhibits the rain-fall for the immediate ports on the shores of the Channel. The stations are named in their order of geographical situations, from west to east:—

STATIONS ON THE SEA-SHORE.

	Elevation.	No. Years Observed.	Average Annual Rain-fall.	Fall for 1885–86.	Rainiest Months for that Season.	Rainless Months for Same Season.	Months with Less than One-fourth Inch of Rain.
Point Conception	258	8	12.21	7.62	Feb. and Mar.	July, Aug., and Sept.	May and June.
Santa Barbara . .	30	19	17.83	23.74	Dec., Jan., and Feb.	August.	July, Sept., and June.
San Buenaventura	50	11	16.87	21.12	Jan. and Feb.	July and Aug.	Sept. and June.
Santa Monica .	50	3	16.13	24.68	Nov. and Jan.	July, Aug., and Sept.	October, May, and June.
Drum Barracks.	32	5	8.74	. . .	Dec. and Jan.	Sept., May, and June.	July, Aug., and Oct.
Anaheim	250	9	11.01	14.75	Dec. and Feb.	July, Aug., and Sept.	June.
San Diego . . .	40	15	11.01	16.95	Dec., Jan., and Feb.	. . . . .	July, Aug., Sept. and June.

The fourth rain-table relates to its quantity and distribution in the inland valleys, and explains itself:—

STATIONS FROM FIFTEEN MILES INLAND TO FOOT OF MOUNTAINS.

	Elevation.	No. Years Observed.	Average Annual Rain-fall.	Fall for 1885–86.	Rainiest Months for 1885–86.	Rainless Months for 1885–86.	Months with Less than One-fourth Inch of Rain.
Los Angeles Co.							
Los Angeles .	371	9	17.64	22.70	Dec., Jan., Feb., and Mar.	July and Aug.	June and Sept.
Spadra	705	12	12.39	16.50	Jan., Feb., and March.	July.	Aug., Sept., and June.
San Bernard Co.							
Colton	965	10	9.84	9.66	February.	September.	June, July, Aug., and Oct.
Riverside . . .	1030	5	9.37	9.60	Feb. and Mar.	July.	June and Sept.
San Bernardino	. .	16	16.17	20.25	Dec., Jan., and Feb.	. . . . .	June, July, Aug., and Sept.
San Diego Co.							
Fall Brook . .	700	11	17.75	26.23	Dec., Jan., Feb., and Mar.	. . . . .	June, July, Aug., and Sept.
Escondido . .	. .	11	15.69	20.87	Dec., Jan., Feb., and Mar.	July.	June and Aug.
Poway	. .	8	14.15	16.80	Dec., Jan., Feb., Mar., and April.	. . . . .	June, July, Aug., and Sept.

In the mountains the rain-fall is necessarily much greater. At Julian, at an elevation of 4500 feet, the yearly rain-fall has a mean of 37.74, which is nearly 2 inches more than that of Turin, on the upper valley of the Po, in Northern Italy; at Julian the yearly precipitation has reached 61.62 inches.

On the desert, at the station of Indio, 12 feet above sea-level, the observations of nine years give an annual mean of 2.32 inches of rain, with some years as low as 1.10. Fort Yuma—also a railroad-station on the eastern edge of the desert, and situated on a hill on the west bank of the Colorado River—has an average precipitation of 3.86 inches annually.

Lieutenant Glassford, of the United States Signal Service, has given the most comprehensive explanation

of the origin and history of the California rains and of its winter storms. It also explains why the rains are always preceded by southerly winds and come from the South, while the rains first appear in the North and gradually approach the South from that direction. For instance, rain is telegraphed as falling in San Francisco; as a rule, it may be looked for in the South from twenty-

Live Oaks on Julian Mountains.

four to sixty hours later; meanwhile the wind is steady from the southward, and when the rain does come it appears at early evening, when the sea-breeze has begun to subside and it comes from the South. Of local rains there are none, as there are no local causes to produce them; and although it may accidentally rain at some rare period without the precursory rains farther north, the storm is always found to be due to the same causes,

only that the winds in their northward sweep have not accumulated a sufficient amount of moisture for precipitation in their earlier course farther north. According to the researches of the Lieutenant, the Californias depend on their rains in proportion to the amount and extent of the cyclonic disturbance which seems to gather or centre in the region of Puget Sound, as there are no ocean winds to bring them any rains independently. The cyclonic area originates or moves with the Japan current on the Washington and Oregon coasts, where the high mountain chain arrests it and causes it to parallel the coast, while its centre wavers up and down, giving to the coast and its immediate neighborhood its great rain-fall; and that only in a disturbance of protracted force, or with a cyclonic development central off the mouth of the Columbia, will its marginal border affect or influence Southern California. The more prolonged is the period of cyclonic disturbance at its far northern centre, the longer the rain and the greater the amount that falls in Southern California; this result is brought about by the aspirating force that is exerted by the storm-centre on the otherwise pacific region to its southward. With the cessation of the aspirating suction created by the cyclonic disturbance to the north the southerly winds cease, and the westerly breezes at once resume their accustomed course, with an immediate clearing away of all clouds and traces of a rain-storm. This is the reason of the inconstancy of the California rains, of the sudden clearing up, and of the beautiful, clear, and cloudless weather that occurs between storms of rain; to these causes this region owes the fact that no steamy, unhealthy, or depressing, or enervating weather precedes, accompanies, or follows its rains, and that no physical disturbances are experienced during the storm periods; the storm causes being at such

remote distances that their physical influences cannot be felt. The following table of comparative rain-fall for the whole extent of the Pacific coast of the United States exhibits, in an undisputed way, the learned description of this part of our meteorology by Lieut. Glassford:—

TABLE SHOWING GRADUALLY DECREASING RAIN-FALL FROM THE 48TH TO THE 32D DEGREE OF NORTH LATITUDE ON THE PACIFIC COAST.

PACIFIC-COAST STATION.	Annual Inches of Rain (Mean).	Approximate Latitude.	Approximate Longitude.
Neah Bay	111.00	48° 15′	124° 25′
Astoria	77.12	46° 12′	124°
Port Orford	70.50	42° 46′	124° 22′
Humboldt Light-House	33.02	40° 30′	124° 20′
Point Arenas	30.53	39°	123° 46′
Point Reyes	28.09	38°	123°
Santa Cruz	25.24	37°	122°
Monterey	14.42	36° 36′	122°
Point Conception	12.21	34° 28′	120° 30′
San Diego	11.01	32° 44′	117° 8′

The above table not only exhibits the two extremes on the Pacific coast, but it gives the rainiest and the least rainy of all the United States sea-stations on any of its extent of sea-coasts; at Neah Bay the yearly precipitation has been as high as 132 inches, with a record of rain for a single day of 6.90 inches, while at San Diego, for a whole year, the total amount recorded in some extreme season has only been 3.75 inches.

RELATION OF RAIN-FALL TO HEALTH AND DISEASE.

I have never placed the stress that is usually laid on the importance to health of a small rain-fall. In the

Khasia Hills, 200 miles north of the shores of the Bay of Bengal, the rain-fall in some years amounts to 600 inches, with an annual mean precipitation of 493 inches; as recorded at Cherrapoonjee, 30 inches have fallen on a single day. Bogota, in South America, with 74 inches; Cape Hatteras, on the Atlantic shores of the United States, with 78 inches; the Oregon, Washington, and Alaskan shores, on the Pacific, with an annual rain-fall of over 100 inches; Valencia, in the southwest of Ireland, with its 235 days of rain, and Seathwaite, in England, with its 152 inches of rain, are no more the developers of phthisis than localities with the least possible rain-fall or the least number of rainy days. This has been well demonstrated by the testimony of many observers. The venerable Lombard, of Geneva, as long ago as in 1834, in his work on the "Influence of Trades on Phthisis," pointed out the fact that those who followed occupations that exposed them to wet and to an atmosphere laden with moisture were less subject to the disease than those in the dry and better-protected trades. Thackrah, in his work dealing with the

HEADQUARTERS OF COMMODORE STOCKTON IN SAN DIEGO, AT ITS CAPTURE FROM MEXICO.

effects of trades on health, made the same observations. Dickinson particularly calls attention to the less liability to diseases on the rainy and foggy west coast of Scotland. Donnelly and Wilde, in their report made to Parliament, observed that the proportion of diseases generally, and of those of the respiratory organs in particular, was all of two-fifths greater on the eastern than on the rainier and more humid western coast of Ireland. All authors, from the time of Hufeland down to the present, have called attention to the exemption from disease and the tendency to longevity that is enjoyed by islanders generally; and, later, Bennet, of Mentone; Frank and Marcet, of Cannes; and Weber have mentioned that the pulmonary invalids did better in the winter of 1878–79, with half of the days rainy and with an unusually low temperature, than they had done at any other season. Bennet, of Mentone, speaks very favorably of the results of the rainy atmosphere of the western highlands of Scotland. Bennet lays stress, however, on the fact that rainy weather, to be healthy, must be accompanied by a temperature of from 55 to 65 degrees; he also particularly notices that in Scotland seasons of great rains are, as a rule, the healthiest of seasons. These points have already been touched upon, but they are here repeated, in conjunction with the subject of rain-fall, to recall the main points to the reader's mind.

ATMOSPHERIC HUMIDITY.

Considerable discrepancy is to be found in the opinion as regards the atmospheric humidity of this coast. Every term in the meteorological vocabulary relative to moisture or dryness has been conscientiously applied to the region to denote the quality of its climate, most observers failing to conciliate the facts that they were

dealing with two opposite climatic factors not often found in unison, to wit, the exceptionally and peculiarly dry soil already mentioned, with its undecaying vegetation and a marine air or atmosphere loaded with ocean moisture; the humidity that is here respired, especially on the sea-shores and outside of the cities, where the peculiarly persistent and undying grasses of the land cover the ground, is as pure an ocean or sea humidity as is breathed on board of ship at sea, as the ground cannot and does not contribute the least particle of moisture, but, on the contrary, it continually gives out heat both by radiation and reflection, lifting higher the watery vapors that are contained in the winds as they sweep inland over its warm surface; higher and higher it carries the vapor—even through the night—and in the morning it is seen gathered in the heavens in the form of a high fog that resembles heavy clouds or following the course of the higher valleys; the air below these, and lying between these fog-clouds and the land, being perfectly clear and bright, while clothes or any moist article that is exposed to the air near to the ground dries rapidly, showing the great relative dryness of and warmth of the lower stratum of air; showing, in an indisputable manner, the sanitary benefits of a warm and dry soil and the manner of its operation, and how, in this climate, the ground-air is by no means the coldest or dampest, as is generally the case elsewhere.

The coast offers a strange contrast in comparison to the rest of the country in regard to its seasonal relative humidity, in the fact that, while with decreasing temperature it increases elsewhere, here it diminishes, as will be seen from the following table, covering several Southern California stations and samples from the Atlantic sea-board and the Mississippi Valley:—

Stations.	Mean Relative Humidity.		Mean Temperature.	
	January.	July.	January.	July.
San Diego, Cal.	68	73	55	68
Los Angeles, Cal.	61	61	54	71
San Bernardino, Cal.	69	73	52	76
Bismark, Dak.	77	63	17	71
St. Paul, Minn.	79	62	22	73
Denver, Col.	52	31	26	73
St. Louis, Mo.	66	62	35	78
New York, N. Y.	75	70	32	74

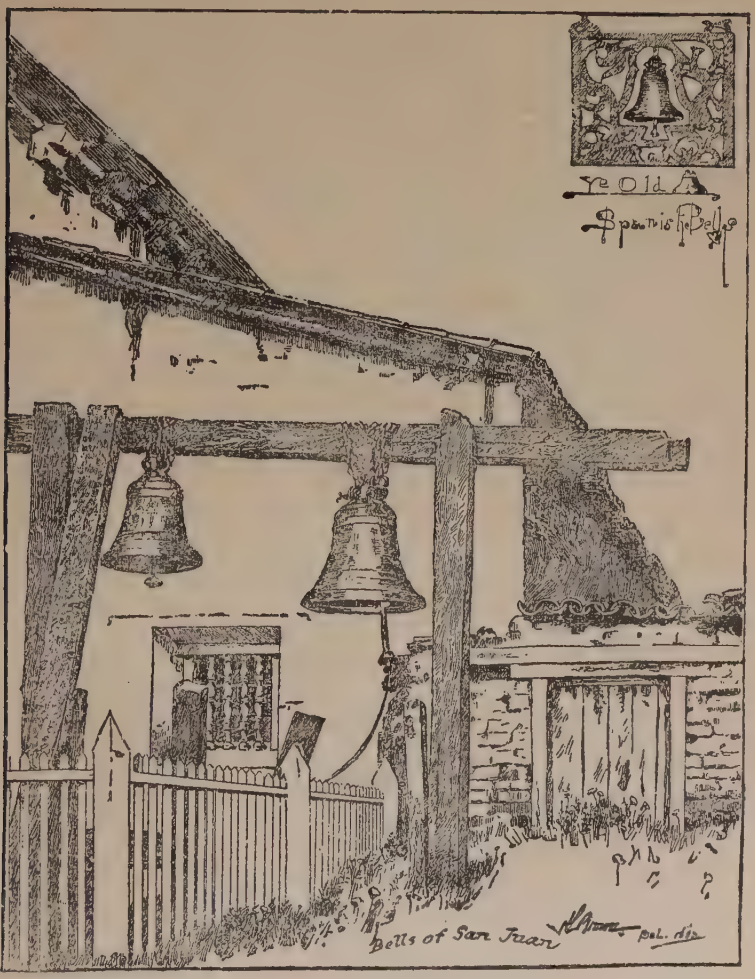
It will be observed that the higher relative humidity in the three first-mentioned stations is coincident with the warmest month, whereas with all the others it coincides with the coldest. The relations that exist on this lower coast between the temperature and humidity are not to be judged by the same rule as elsewhere; with the maximum temperature there is always such a rapid diminution of atmospheric moisture that it has been as low as 5 per cent., when book-covers curl outward and bread and everything else undergoes a rapid desiccation. The only sources that this region has to draw its extra heat from—the desert and mountain fires—make any other combination of heat and humidity out of the question. This is why any natural degree of excessive heat is never followed by any physical disturbance, and why it is so peculiarly endurable and unnoticed. The following table gives the mean relative humidity for each month of 1878 for the coast and the inland regions; other localities are added to the table for the purpose of comparison :—

MONTHLY MEAN HUMIDITY IN SOUTHERN CALIFORNIA.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual Mean.
San Diego, Cal.	68	74	78	74	75	76	73	77	74	73	55	61	72
Los Angeles, Cal.	61	69	72	69	70	72	61	64	62	67	46	56	64
ELSEWHERE.													
Sacramento, Cal.	79	80	74	65	57	53	43	46	48	49	72	74	61
St. Paul, Minn.	79	72	65	58	56	69	62	72	66	70	74	78	68
Denver, Col.	52	47	42	32	46	48	31	35	36	50	49	54	44

The salubrity and agreeableness of a climate do not evidently depend upon a minimum of moisture, provided the temperature be moderately low; it would seem as if an atmosphere holding considerable moisture was the most consistent with good health and long life. According to Levy, the average humidity the world over is 72, and Briggs, the best authority on the subject, in regard to the United States, assigns 70 as the most consistent with health for this country. Beard attributes the better health and longer life of the western Europeans to the great relative humidity of western Europe; and, on the other hand, he attributes all that is comprised under the head of American nervousness to the very dry climates of the United States. The humidity of this region is, at the best, but a marine moisture, and, either as held as vapor in the air or in the shape of fog, it does not become a factor of putrefaction to either animal or vegetable matter. Meats, fish, fruits, and grasses, freely exposed to its influence, are cured and well preserved at any locality, either on the sea-shore or up in the hills.

I have often seen a quarter of beef hanging up on a tree by a rope and tackle, which was let down by



PART OF OLD MISSION SAN JUAN.

these means for the purpose of cutting away what was wanted for the family use, and which has kept good to the last morsel. Animals killed or dying, and left on the

ground, do not corrupt, but simply mummify. Hides are simply hung up or spread on the ground. The California raisins are all sun- and air- dried. The mulberry, with which the silk-worms are fed, does not require the same care that is exercised in France or in Italy, on account of the putrefactive decay of the vegetable substance and consequent injury to the worms that takes place in those countries; the branches are here simply thrown in, and the leaves keep in a good condition until they are all eaten up.

Leather articles, books, and such materials do not mold in ventilated apartments, and sea-mosses, ferns, and botanical specimens of all kinds are preserved without the least difficulty; salts do not deliquesce—all tending to show the harmless character of the humidity in whatever degree it may be present, and its general salubrious effect on both animal and vegetable tissues—a striking contrast to the effects of the humidity of Madeira, where leather articles mold, salts deliquesce, metal articles rust, botanical specimens can hardly be preserved, and musical instruments can hardly be kept in tune.

The relation that exists between heat, moisture, and human health and life was well exemplified during the heated week ending July 6, 1872, at New York, when the mortality exceeded that of the cholera week of July, 1866, and of the grippe week of January, 1890. In the fatal week of 1872, the mean temperature was 83.97 degrees and the humidity was 75 degrees,—a combination that is utterly impossible in the Southern California climate.

BAROMETER.

Being out of the track of storms, this region is not subject to any great or frequent barometrical disturb-

ances; from the description already given in connection with the subject of rain-fall, it will be seen that the cyclonic area is so distant that it can cause but little disturbance so far to the southward. A study of the low barometer areas that are carefully recorded year after

ANCIENT CLOISTER-GALLERY, SAN JUAN MISSION.

year by the United States signal Service shows that this region is left away to the right as the storm-track moves southward from the time it strikes the coast on the shores of Puget Sound. The desert storms do not cause any barometrical fluctuation; the only atmospheric

elements that they increase are the heat, electricity, and dryness; neither do the rains of winter make any appreciable difference in the barometer. As before remarked, there is no local disturbance that in any way accompanies the rain-fall.

The following table gives the mean monthly readings of the barometer for San Diego on the Channel shores and Los Angeles for the inland regions:—

	San Diego.	Los Angeles.
July	29.836	29.530
August	29.872	29.575
September	29.823	29.523
October	29 907	29.592
November	29.963	29.672
December	29.962	29.656
January	30.030	29.706
February	29.976	29.644
March	29.969	29.646
April	29.880	29.560
May	29.886	29.570
June	29.872	29.559

ATMOSPHERIC ELECTRICITY.

In this regard this region of country is peculiarly situated. The hot and arid desert to the east; the cool ocean, with its cool and moisture-laden atmosphere; the exceptionally dry soil of the land of the coast, and the two currents of air that continually friction against each other—a cool, marine, humidity-laden, ocean breeze moving rapidly inland as the lower stream, and a warm, dry, upper current moving as rapidly out to sea—are conditions that are all eminently favorable to the devel-

opment of electricity,—the exact analogue of the electrical condition that is found on the high Peruvian Andes, and precisely similar causes—opposite currents of air of widely-differing temperature and of hydrometric condition—lying one over the other. The extreme dryness of the ground makes it a very poor conductor; so that all this abundance of electricity at times charges metallic bodies that may be placed on any insulating material. During the prevalence of one of those desert storms already mentioned the amount of electricity is so increased that the hair will stand out as if on an insulating-stool; horse's tails then stand out as if they are thick brushes; but no physical disturbance accompanies these occurrences. The rheumatic or the invalid need never have to resort to insulating-glass disks to retain any electricity in his body.

DIAPHANOUS CONDITION OF THE ATMOSPHERE.

This property may be considered the fairest test of the clearness of the air and of its freedom from any overcharging with watery vapors or minute particles of mineral, vegetable, or any other organic or inorganic dust. This atmospheric condition is at times found on land in its most accentuated form; when small objects, as the outlines of a house, a rock, edge of a hill, or of a ravine, stand out sharp and well defined at a distance of fifteen miles, the diaphaneity causing them to appear as if no more than one or two miles off; the granite shaft that stands near the sea-shore at the initial point of the westerly limit of the Mexican boundary-line often stands out boldly outlined against the southern landscape, and plainly visible from the Hotel del Coronado, some sixteen miles to the north of the monument. From the top of the Volcan Mountain, a high hill of the coast range some

fifty miles inland, I have seen the whole panorama of the shores and bays of the San Diego region, the city and villages and the hills and valleys all sharply out-

View of Hotel del Coronado from the Boat-House Observatory.

lined, and, on days when the bank of fog that usually hangs far out at sea has been pushed farther out than usual, the Island of San Clemente, seventy miles to the

westward, off the coast,—distant one hundred and twenty miles,—seemed not twenty miles away; from the highest peaks of Mount San Bernardino this diaphaneity allows a still more extended range of vision, as on a bright, midsummer day a circular panorama of nearly three hundred and fifty miles in diameter, comprising the most varied scenery of high mountains, low deserts of yellow, shifting sands, cultivated valleys, and ocean that is imaginable. This condition of the atmosphere is so deceptive that often newly-arrived strangers, accustomed to measure distances by the eye in the thicker and less diaphanous air of the East, have started to walk to a hill for the prospect, which seemed about a mile off, when the hill was really a high mountain more than twenty miles away.

SUNSHINE.

This region enjoys an unusual amount of sunshine, there being but few days on which the sun does not appear for some part of the day. The prolonged cloudy days and of threatening rain are here unknown, and even between showers the sun often shines out as it does after an April shower in the East; foggy days in the London sense are here likewise unknown, as our fogs are, as has been described, high fogs, which disappear with the rising of the sun, or they may be light evening fogs coming in from out at sea after sunset. The latter variety is uncommon and of very rare occurrence, and liable, at times, in the spring. It must be a very thick fog, indeed, that will persist to remain and hold its own against the sun-heat of the latitude and the radiating heat of the ground, which is of the most constant character; and day fogs never occur. The days are long, the 20th of June being fifteen hours and seventeen minutes in length, and the 20th of December being ten hours

between sunrise and sunset. The sky is of a clear, bright blue, and at times a whole series of months may pass without a speck of cloud to mar its surface; it is this bright sunshine and perpetual clear, blue sky that is the real unconscious power—more so than any local custom or habits—that brings Californians back to these shores, who, after many years spent on the coast, have attempted to again live in the East. What benefits are to be derived from living in an atmosphere of warm and genial sunshine are certainly to be had at their maximum in Southern California.

THUNDER AND LIGHTNING.

The most expressive proof of the absence of thunder and lightning lies in the fact that on the San Diego Bay region and in the San Gabriel Valley, with their vast populations, there is not a lightning-rod to be seen on any building; neither do thunder-storms occur on the Channel. In the mountains, however, the case is different; there the storm elements try to outdo those of New England. On the coast or in the inland valleys the rain comes without any of the usual Eastern or European storm accompaniments; it simply begins to fall about sunset in a gradually increasing shower, without any extra wind; it patters down through the night, with a probability of the heaviest downpour taking place after midnight, but never with any violence. During the winter of 1889–90 there was, on one occasion, a night of rain with several sharp peals of thunder, being the first I had heard in eighteen years of residence in San Diego. During the summer, flashes of heat-lightning are often seen over the mountains to the East; it generally appears coincidently with the occurrence of the Sonora rains or the summer storms of Western

Mexico that come as far as the eastern edge of the desert, and no farther.

OZONE.

The southwesterly exposure of the coast and the westerly winds which prevail, the electrical condition of the air and the forests of pines through which the sea- and land- breezes sweep on their way to and from the desert, all tend to load the atmosphere with ozone. Some eleven years ago Dr. Hearne, the obliging officer in charge of the U. S. Signal Station at this port, kindly instituted a series of morning and evening observations for one month for the purpose of determining the atmospheric condition as to ozone; the method employed was Schonbein's test, the scale used being that of 10 degrees —from the lightest perceptible tint to the deep-blue color of iodide of starch; the paper exposed from 8 A.M. to 8 P.M. gave a mean of 4.9 degrees, and that exposed from 8 P.M. to 8 A.M. gave a mean of 6 degrees for the month; of the sixty-two tests four gave 10 degrees of the scale, three out of the four being from the night exposures, the lowest figure of the scale observed being 2 degrees, which happened nine times out of the sixty-two.

COMPETENT OBSERVERS' VIEWS OF THE CLIMATE.

General Emory, who first visited this coast as a Lieutenant of Topographical Engineers with the invading army of General Kearny, in 1846, noticed the coast climate as favorable to all the grains and fruits of the temperate zone and many of the tropical, which have flourished luxuriantly, "and that on descending to the coast the winds from the southwest in winter and northwest in summer produce a great uniformity of temperature, and the climate is, perhaps, unsurpassed for salubrity." "The white teeth of the Californians, and

the blood tingling in the cheeks of their olive-colored faces," as indicative of their superb physical health, did not escape his notice. (Emory's "Report and Notes of Travel in California.")

General Greely, chief signal officer of the United States, in an exhaustive article on summer climates, after enumerating the requisites for the best moderate temperatures, balmy breezes, and cool nights, says: "There is possibly one place in the United States where such conditions obtain, a bit of country of about forty square

VIEW OF SAN DIEGO BAY. CORONADO FERRY IN RIGHT MARGIN.

miles at the extreme southwestern part of the United States, in which San Diego is situated; but even here, perhaps, once in two or three years, the sultry blasts of the Mojave Desert pass over the low mountain range and parch this favored district." (This is the "norther" previously mentioned.) (Article of Gen. Greely, in *Scribner's Magazine*, April, 1888.)

General Greely speaks from personal observation and from the records of the Signal Service, which, I think, were limited to the area mentioned. Precisely the same climate is found, however, from Point Conception down

as far as the limit of the concession granted by Mexico to an English company, some two hundred miles south of San Diego, and extending from the sea-shore to some distance inland.

Professor Louis Agassiz, when on the shores of San Diego Bay, remarked, "I have seen many parts of the world. This is one of the favored spots of the earth, and people will come to you from all quarters to live in your genial and healthful atmosphere."

Wm. Smith Brown, in a review of the climatic resorts of three continents, after forty years spent in travel and observation, says: "For those who are simply delicate, or inherit a tendency to consumption, I know of no country where I should regard the chances better for fair health and a prolongation of life than a residence in Southern California." ("Winter Climatic Resorts of Three Continents," in *Harper's Monthly* for November, 1887.)

I am often asked if these climates do not favor rheumatism. Among the Indians of the coast rheumatism is unknown, although it is no stranger to the Indian of the Colorado Desert, of Alaska, or the islands of the Northern seas. If the atmosphere had any tendency to produce it,—as is done by the climate of Japan, where it is only by the greatest of care that their horses are exempted from it,—the California horse would certainly be a victim, as for generations he has known no shelter or attention; but a hardier animal does not exist. Ringbone and spavin, that product of hereditary or acquired rheumatism so common elsewhere, is not found among them. The improvements made in the imported Eastern breed in physique, speed, and endurance, when bred on this coast, are sufficiently evident from the showing lately made on eastern tracks by California horses.

I have elsewhere alluded to the similarity existing between the high Peruvian altitudes and the Southern California coast in their climatic conditions. There is another similarity in the matter of the physical development of the chest, which is there ascribed to the rarefied air of the altitude. Dr. Ward observed among the natives the largest proportionate chests for their height. I have observed the same condition with the natives on this coast, their chest capacity being simply enormous.

The good effects of this climate in developing the physique are not limited to the original native population and the horse; its effects are apparent in the rising generation. The original inhabitants excelled in personal beauty. It was remarked by the early Spanish explorers that the women of Southern California were very handsome, and that the men were well formed. Michler also noticed that the women were beautifully developed and superbly formed, their bodies as straight as an arrow. (Bancroft, "Native Races.") Beard, in his work on "American Nervousness," ascribed beauty as a gift of climate, and observes the indisputable claim that America develops more beautiful women than Europe, not only as to quality, but as to its extent among the people. California bears the same relation in this regard to the United States that the nation bears to Europe. In California personal beauty is becoming a state characteristic, and the Californian will soon be as distinctive a feature and as celebrated as the Greek.

Charles Dudley Warner, after a careful investigation, has pronounced this region "Our Italy," or the "Riviera" of the United States; adding that "any description would fail to give the charm of existence here; restlessness disappears, but there is no languor or depression." He also expresses his belief that the Southern California

UNDER THE CACTUS AT THE OLD MISSION, SAN DIEGO.

summer climate is as desirable for pleasure-seekers and for invalids as that of winter, and that the climate of winter is so mild that one has not to make a continual fight for life with the elements, as elsewhere. I should advise all prospective visitors to read "Our Italy." It can be procured from Harper Brothers, New York, and I do not know of a more candid and plain-spoken honest work on California.

EFFECTS OF THE CLIMATE.

This whole region enjoys an immunity from any endemic diseases, but the most remarkable being that from diseases of the respiratory organs of an acute form and phthisis. Those who experience the greatest immediate benefit are those whom some serious illness has left weakly and broken down, the wrecks of overwork and malaria, the nervous and anæmic, and those afflicted with some mild disease of the respiratory organs. As remarked by Beard, those that begin to sleep well are safe in assuming that they are receiving some benefit from the climate; the above class of cases generally sleep well as soon as they arrive. Generally speaking, those coming from the East experience an improved capacity for food and sleep, with a general stimulation of all the faculties of animal life; women, especially, are generally improved by the change. From my personal observation I can say that at least an extra ten years' lease of life is gained by a removal to this coast from the Eastern States; not ten years to be added with its extra weight of age and infirmity, but ten years more with the additional benefit of feeling ten years younger during the time, for there is a rejuvenating influence about the atmosphere that is remarked upon and felt by all newcomers after a residence of several months.

Dr. R. J. Gregg has related to me some cases from his practice showing the almost incredible results of our climate upon phthisis; he, however, did not place so much stress on the benefits derived from the presence of ozone as others have done; he has considered it rather a nervous and heart irritant. Of the phthisical, I have observed the best and more remarkable results in the laryngeal variety; these cases soon regain their voice, the loss of rest and flesh is replaced by good sleep and a gain in weight, the countenance gradually loses that peculiar expression of physical distress, and very often, with nothing but the hygiene of common sense and climate, the patient glides into recovered health almost insensibly. I had one case of this kind, a young man who, when a child, was taken to Minnesota on account of the tubercular manifestations. After some years' residence there he was advised winters in Florida and Bermuda, with summers in the mountains of New York, all without benefit; who completely recovered his health, or, rather, became a well man. This was a remarkable case; the disease developing so early in childhood, and disappearing in this climate, after so many efforts elsewhere.

Dr. William A. Edwards, formerly of Philadelphia, now of San Diego, has given me the history of some interesting cases of cured laryngeal phthisis occurring in his practice since removing to California.

Of the general run of cases of all varieties, our banks, stores, and business men are largely made up of cured cases. The mechanics and trades class is well sprinkled with those who came here almost hopeless. Of the physicians, lawyers, dentists, and clergymen, it is safe to say that eight out of ten originally came here for their health. At one time there was not a solitary physician practicing in San Diego living there from

choice. It was kidney with one, heart with another, larynx with this, and lungs with a number; rheumatism, gout, asthma, and malarial poisoning were all represented, and not one felt safe to leave, some not daring even to go on a visit, so well convinced were they that to the climate they owed their existence. During sixteen years we have not lost one from the ranks of the old guard of invalids.

Cases with hæmoptysis generally do well. Dr. Worthington, of Los Angeles, who came as a pulmonary invalid with hæmoptysis, says he never despairs of a case in which there is evidence of fibroid disease, be it ever so extensive. Every physician, whether in Santa Barbara, Los Angeles, the San Gabriel Valley, or in San Diego, has cases by the score where the disease, in its incipiency, has been arrested or cured, even when serious inroads had already been made. In my practice I have had a number of cases of hæmoptysis with good recovery.

While connected with the Marine Hospital at San Diego, for a period of seven years, I never saw an acute case of phthisis as originating on the California coast, but saw a number of cases who had taken a sea-faring life to be cured of it. One gentleman especially, now well and hearty, then and still now in the employ of the Pacific Coast Steamship Company, some thirteen years ago had repeated hæmorrhages, short, quick respiration, hectic flush, night-sweats—who, in spite of severe hæmorrhages, as soon as he was able to work, kept right on with his occupation as freight-clerk, and afterward as purser, running from San Diego to San Francisco, at times changing for the novelty to a few trips to Alaska, and making one voyage to China and Japan; he was several years in improving, but has been well repaid for his perseverance by now having a strong, vigorous physique.

MEXICAN INDIAN, 140 YEARS OLD. 121

Another case (now the steward of the Ensenada steamer *Pacheco*) I saw some years ago, with waxy skin, œdematous legs, with slight œdema of hands and face, very profuse hæmorrhages, with apparently not a sound bit of lung, now fully recovered, and following his vocation.

Several years ago the American ship *Annie Camp*, anchored just inside the heads, and, on boarding her, I found all the crew down with scurvy; one man had died and had been cast overboard just outside the bar; several were lying helpless in their bunks. Seven of the crew were transferred to the Marine Hospital in a very precarious condition; two of these gave all the indications of advanced phthisis, and three more of incipient phthisis; all made a slow recovery except one, an old seaman named Peter Woods, one of the two advanced cases. He was finally sent to San Francisco, apparently with only a short time to live, but still hanging bravely on. Some years afterward the U. S. steamer *Hartford* steamed into port, and I received a call from my former patient, Peter; spare and old, but still a hearty tar, and in the navy.

VITAL STATISTICS.

From a carefully prepared table from the mortuary report in the Health Department's office at San Diego, I can give some interesting data for this city in this regard. In a period of ten years there were 258 deaths registered from phthisis. Of these 1 had only arrived the day before; 33 were here from one to thirty days; 46 from thirty to ninety days; 29 from ninety to one hundred and eighty days, and 35 from one hundred and eighty to three hundred and sixty-five days, making 144 who died after from one to three hundred and sixty-five days' residence. Of the balance, 27 died during the

second year's residence and 18 managed to worry through ten years after coming here. Of the remainder, 24 died between the second and ninth year, and of 36, although strangers, no exact information as to actual length of residence could be obtained; the remaining 9 were born in Southern California.

Out of 258 consumptives, 86 were foreign born, Canada having 21; Germany, 13; Ireland, 13; Mexico, 13; Sweden, 7; England, 4; Scotland, 4; Switzerland, 3; Greece, 2; France, 2; Russia, 1; Portugal, 1; China, 1.

From the United States, New York furnished 24 and the New England States 18, the balance coming from every State in the Union.

There is, in Southern California, and especially in San Diego, a large population of Italians, Greeks, French, Spaniards, and Austrians from the shores of the Adriatic, with a sprinkling from the Mediterranean Islands of Malta and Minorica and a number of Portuguese. Out of all these many are engaged in the fisheries, whaling and sealing, many having lived here for over twenty years; not one of the colony living here has contracted phthisis, or died of any diseases of the respiratory organs.

Of the 5 from the above nationalities in the recorded deaths, all came here with phthisis, and were no part of that population. The Portuguese was here two years; one of the French, a woman of 23 years, only four months; the other French, a man of 60 years, only eighteen days. The two Greeks were here four months and six months respectively.

There is something interesting to us as physicians in the 9 recorded San Diego-born as dying of phthisis; out of the 9 deaths only 1 was a male; the ages of the 8

females were as follow: 36, 27, 20, 20, 18, 17, 16, and 15. At a meeting of the San Diego County Medical Society I called attention to the nature of these cases, as I have attended a number in Mexico of the same order. It was questionable with me whether they were really cases of phthisis, and whether, from the nature of the beginning of the illness, they were not cases for gynæcological treatment, and whether, if properly treated in the beginning (they never consult a physician until too late), the disease ever would end as it usually does. If you will recall the ages, they were, with two exceptions, young girls. I am informed that it originates with a habit they have of bathing their feet in cold water to check the menstrual period, usually the practice being followed by no serious result. The cases were attended at the end with a general break-down—the lungs, from their importance, doing so very prominently, hence their registration from phthisis. My disbelief that they were true tuberculosis is founded on the fact that no one was ever infected or fell a victim to the disease by being with them, although the adobe houses, many with only soil floor and no ventilation, are eminently favorable nurseries for germs, and the ill-nourished condition of many of the Mexican population would predispose them to the infection.

My friend, Dr. McHatton, who practiced for many years at Mazatlan and elsewhere on the Mexican mainland, tells me that phthisis is quite prevalent and very fatal with the native Mexicans; that when it begins with one of the family it takes them all before it ends; many are scrofulous, ill-nourished, living in total disregard to hygiene of any kind; a natural predisposition to phthisis is with them.

Knowing all this, and the infectious character of

phthisis, I have never reconciled myself to the idea of tubercles in connection with the foregoing cases, never having had an opportunity, by post-mortem examina-

San Diego Bay from Coronado Beach.

tion, to assure myself of the true condition. One thing is certain, that, if they were tuberculous, they certainly did not infect any one else, neither did any of these cases

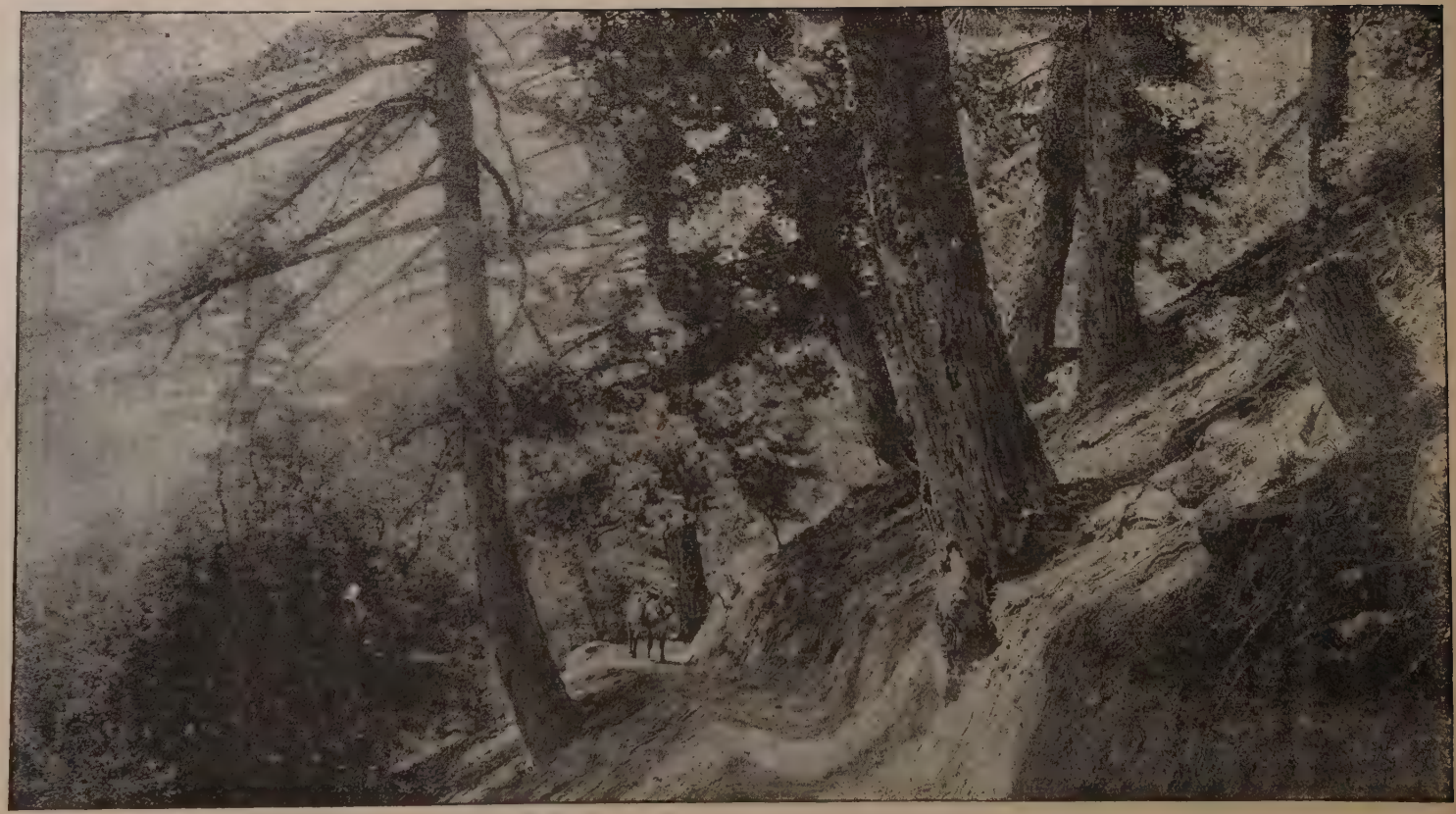
exhibit any bacilli on examination. In connection, I may add that there are now on the Bay of San Diego several hundred girls, born here, from 14 years of age and upward, of American and European parentage, and I do not know of a case occurring with them analogous to these cases.

GENERAL STATISTICS AND ADVICE.

The general statistics relating to deaths from consumption, as given in many books, are misleading. California is, necessarily, given a large percentage, which signifies nothing more or less than so many have left their homes in a moribund condition. Most patients wait until only a stub of a lung is left clustered about the large bronchial tubes, with a tubercular liver and in the last stages of phthisical marasmus, and either come of their own accord or are shipped off "to test the truth of the California climate," which would be about like giving a surgeon the remains of a gun-blown Sepoy to reconstruct into a healthy Hindoo. The climate can arrest diseased action in certain cases, and prevent its development in others. It can even prolong the days of the organically demoralized, but it cannot re-animate the mummified remains of Rameses II any more than it can reconstruct new organs where they have undergone a complete structural change or suppurative destruction. There is a time when an invalid can come with what might be said every chance for a recovery in his favor; but he must come before the undertows of malassimilation, malnutrition, and general destruction have carried him off his feet, or before all recuperative powers are completely evaporated. I daily see patients who are leading an invalid existence who, had they started four or five months previously, would have made a complete recovery.

Another mistake made by many patients consists in their believing that if they get out here before the cold of January they are all right. Consumptives do better by starting for California as soon as they can, and thereby avoiding the summer heat, variable fall, and the cold winter, with the overheated rooms of their own homes. Many lose their chances of recovery by remaining home during the summer. My advice, based on experience, is, start as soon as your physician thinks you are in danger, be it in April or December.

Again, if you are coming for your health, don't undertake to make a tourist's picnic out of your trip. I have seen many who have done so wear themselves out sight-seeing. I have seen many more come by roads which they should have avoided *because they wanted to come one way and return by another*, so that they might see more. By such a course I have seen many a patient aggravate his condition, and in more than one case bring on their first hæmorrhage by the fatigue and exposure incident on their want of proper instruction. *If you are after lost health, attend to that, and don't convert yourself into a tourist or a picnicker*, as you probably require more rest and quiet than revelry or deviled ham-sandwiches, hard-boiled eggs, and picnic pies or cakes. Make it your sole business to attend to what you left your home and friends for—the regaining of your health. Keep out of crowded halls, churches, and parties; eat regularly, go to bed regularly, dress conveniently, live generously, be patient; do not expect to be transformed into a Samson or a Goliath in three weeks; expect ups and downs; stay in the open air as much as possible; be rational; don't lie, like a Strasburg goose, broiling your liver in a "sun bath;" and, if there is any "build up" to you, it will come at its proper time.



ASCENDING MOUNT WILSON BY THE TRAIL, NORTH OF PASADENA.

By permission of the
"California Illustrated Magazine."

ALTITUDES AND SOUTHERN CALIFORNIA RESORTS.

Helen Hunt Jackson has well said that, climatically speaking, the California of the South was an island on land, so completely insulated is it from the influence of any of the surrounding climates. As observed by the talented and lamented authoress above quoted, "Climate is to a country what temperament is to a man,—Fate. The figure is not so fanciful as it seems; for temperament, broadly defined, may be said to be that which determines the point of view of a man's mental and spiritual vision, —in other words, the light in which he sees things. And the word 'climate' is, primarily, simply a statement of bounds defined according to the obliquity of the sun's course relative to the horizon,—in other words, the slant of the sun. The tropics are tropic because the sun shines down too straight. In the temperate zone the sun strikes the earth too much aslant. There are a few spots on the globe where the conditions of the country override these laws, and do away with these lines of discrimination in favors. Florida, Italy, the south of France and of Spain, a few islands, and Southern California complete the list."

It was practically the same view of the subject that induced the late scientist, Professor Louis Agassiz, when on the shores of Southern California, to observe, "I have seen many parts of the world; this is one of the favored spots of the earth." Charles Dudley Warner, in "Our Italy," writing under the inspiration of these unique climatic conditions, said: "There is a geniality about it for which the thermometer does not account, a charm which it is difficult to explain. Much of the

agreeability is due to artificial conditions, but the climate man has not made nor marred. It is a true marine climate, but a peculiar and dry marine climate, as tonic in its effect as that of Capri, and, I believe, with fewer harsh days in the winter season." Gen. A. W. Greely, Chief of the United States Signal Service, an occasional visitor to these shores of continued spring, calls attention to the very peculiar and insulated condition of the climate of the section in an interesting article in *Scribner's Magazine* for April, 1888, to which the reader is referred.

One great peculiarity in this climate is the far inland influence of the marine climatic characteristics, made so by the aspirating influences of the great upward currents of overheated air arising from the glistening and arid wastes of sand of the Mojave and Colorado Deserts, which during the hours of sunshine keep a steady stream of sea-air flowing eastward and upward from the shores, through valley and over hill and mountain, until it disappears over the mountain-crests to sink into the deserts. This result of a very peculiar combination, of what might be called the elements of the physical geographical make-up of Southern California, tends in a great measure to modify the effects of our altitudes, which are only altitudes as elsewhere in a barometric sense, and hygrometrically in having at times a somewhat drier air; the sea-breeze, as a rule, parting with a part of its moisture as it journeys along with its load of ocean humidity from the sea-shores to the mountain-crests.

A winter or summer passed in Southern California has generally been associated with Santa Barbara, Santa Monica, Long Beach, Redondo, Carlsbad, Coronado Beach, or San Diego, all stations at sea-level, or with the low elevations at less than 300 feet, like at Los Angeles, Escondido, or any of the low-lying inland val-

leys among the first ranges of hills; hence, any reference to its climate, either for pleasure or health,—to those unacquainted with Southern California,—brings up

Boy and Ferns.

visions of low, warm sea-coasts or summer seas, and, owing to our southerly latitude, of a warm, steamy, relaxing atmosphere, with never a thought of the existence of medium and high altitudes, where the air is as

rarefied as in the mountains of Colorado, Idaho, or of Montana; or where the scenery rivals that of the Swiss or Bavarian Alps. Even those who have wintered at San Diego season after season, but who have never gone out of sight of its bay, have left in ignorance and are incredulous of the wealth of forests of pines and of firs, of the grassy meadows, thick masses of wild roses and underbrush, clear lakes and babbling brooks, filled with speckled trout, that lie hid between the sea and the seemingly near but yet far mountain-crests to the north and east. Unseen and unsuspected, these altitudes, nevertheless, exist. At Santa Barbara and San Buenaventura they are close to the coast; they recede as Los Angeles is approached, and with the Santa Rosa Mountains, about midway toward San Diego, they again near the coast. With the Santa Margarita range, the highlands again recede inland, describing a huge semicircle, with the convexity of the arc toward the rising sun, leaving a vast stretch of plain and valley between the sea and the foot-hills in the latitude of San Diego. Below the boundary-line, in Mexico, the mountains again approach the sea.

Among these elevations are to be found not only all the peculiarities of soil, scenery, and climate that belong to the heather-clad hills of Scotland, but the peculiarities of the Appenine slopes; those of the fertile valleys of Northern Italy, of the fir-clad hills of Norway, and the aseptic-atmosphered Swiss Alps resorts of Davos or of Andermatt are here as faithfully reproduced, without, however, any of the attendant discomforts of the long-lasting winter mantle of snow or piercing Alpine zephyrs, that make some seasons anything but seasons of comfort in some of the latter-named localities. Snow does certainly fall in Southern California on the higher altitudes,

The Moor

but at elevations of from 4000 to 5000 and 6000 feet it does not remain long; the warm, semi-tropical sun of the latitude soon causes its disappearance. At the above elevations snow does not fall even every winter; but on the northerly declivities of Mount San Bernardino and Mount San Jacinto, at an elevation of 11,000 feet, snow does not only fall, but often lingers on until late into the summer.

Varying elevations, with considerable thermometric differences in the day and night temperature, can be found at Santa Barbara, Los Angeles, and San Diego, in different parts of the same town, being, when high, cooler in the day and warmer at night; besides the different effects that a difference of 100 or 200 feet elevation and difference in barometric pressure may produce in persons of more than usual nervous sensitiveness,—something that I have more than once noticed and observed to act beneficially by changing in either direction, in cases of insomnia and slight neuralgic affections. In this regard I may state that I have found elevations *above the surroundings* to have a more beneficial effect on patients—especially the decidedly neurotic—than the mere elevation above sea-level; so that elevation above the immediate surroundings must not be overlooked, as there is a vast difference in the chemical constituents of the air and of its constant thermometric and hygrometric condition found between the atmospheres of such localities,—conditions which are more effective for good or evil than the difference in mere barometric pressure. In fact, I know of many cases wherein the good or evil effects of the former have been attributed to the latter. In many localities I have seen orange- and lemon- trees growing luxuriantly at certain elevations, where a descent of half a dozen or more miles, to valleys some 1500 feet

lower toward sea-level, neither the orange or lemon would thrive.

Entering the western or inhabited parts of Southern California at Barstow, we find ourselves at an altitude of 2105 feet; from this point the railroad goes upward to the summit of the range, where an elevation of 3819 feet is reached,—a locality where at times there falls as much as 28 inches of rain in twenty-four hours; here the road descends to the southward, passing the famous Arrowhead Hot Springs and hotel, at an elevation of 2000 feet; 925 feet lower than this resort the train reaches San Bernardino. If we enter the region from the Yuma route, the traveler first comes to Banning, on the confines of the Colorado Desert, at an elevation of 2317 feet; a slight ascent brings us to Beaumont, at an elevation of 2560 feet—a locality noted for its good accommodations, and for its remarkably dry and bracing air—a perfect haven for the asthmatic and the rheumatic. From this station, as in the case of the northern route, the descent is made rapidly to Colton, some three miles to the south of San Bernardino, Colton being at an elevation of 965 feet. Following the two routes toward Los Angeles, we find that the stations on the north side of the valley are somewhat at a higher elevation than those on the south side. Among these stations we find Riverside, which stands at 990, Pasadena 829, Pomona 875, Ontario 981, and Los Angeles at 293 feet elevation. The city of Los Angeles is situated at a somewhat higher elevation than 293 feet, which is that of the Southern Pacific Railroad-Station, many of the residences being situated on ground from 100 to 200 feet higher. Northward from Los Angeles the railroad passes through a series of elevations to Tehachapi, on the crest of the northerly range of mountains, at an

elevation of 4025 feet. Dr. Walter Lindley, in speaking of the vicinity of Newhall, which stands at an elevation of 1265 feet,—the lowest point on the plains in which it stands,—mentions that the average elevation of the plain on which it is situated is about 2500 feet. Here, the Doctor tells us, we have cooler winters and warmer summers than in Los Angeles, and that the air is of such an extreme degree of dryness that fruits are brought to Newhall in large, flat cars from the north and allowed to remain side-tracked only for the purpose of drying; during some seasons, so great is this industry that the locality looks like the encampment of an army. This arid-atmosphered region is not devoid of attractions, as Dr. Lindley tells us that Elizabeth Lake covers an area of some 600 acres, and that in the vicinity, at an elevation of 3700 feet, are a number of smaller lakes, surrounded by a very fertile country; the neighborhood of these lakes abounds in ducks, geese, deer, rabbits, and quails.

From Newhall the Santa Barbara branch of the railroad descends slowly to the westward in the direction of Santa Barbara and the ocean. The Ojai Valley opens toward the sea from the north as the road passes its neighborhood, stages meeting the travelers at the station to take them up into the valley. Dr. A. B. Stuart, whom I formerly well knew in Minnesota, resided in this valley for a time, and has given me the most glowing accounts of its charming and salubrious climate, which he likened to that of the Vale of Temple in the classical age of ancient Greece. My friend and classmate, Dr. Cephas L. Bard, who has practiced in the neighborhood for over twenty-five years, has likened the Ojai Valley to a terrestrial paradise. This valley is really one of the charming spots of Southern California;

well wooded and watered, easy of access and near to the sea, with its orchards and homes, it forms a picture not to be forgotten.

Turning to the southward there is a road running from San Bernardino into San Jacinto, which stands at an altitude of 1400 feet. From this thriving railroad-station a wagon-road takes the traveler up into the Strawberry Valley, at an altitude of 5200 feet. Here we find picturesque forests of pine and fir, stretches of rich meadows, and strips of thickly-bushed land. From this valley a series of paths and trails lead to Tauquitz Valley, some 7500 feet in elevation. Dr. Lindley describes this valley as an enchanted locality, "a magnificent combination of forest and grassy plains." Ascending still higher, to 9000 feet above sea-level, the traveler enters a beautiful meadow traversed by a mountain-stream; this is the entrance to the Tamarack Valley. Giant pines and stately firs, with stretches of grassy meadows covered with flowers, characterize the scenery of this valley. Still higher, and an elevation of 10,300 feet is reached, where a small plain affords fine camping facilities; 800 feet above the level of this plain stands the highest peak of the mountain—11,100 feet above the sea. Many former invalids, victims of hæmorrhages, hepatized lung, and of the many ills that go to make up the list of pulmonary diseases, have found a home and lost their ailments in the hills and valleys that skirt this mountain.

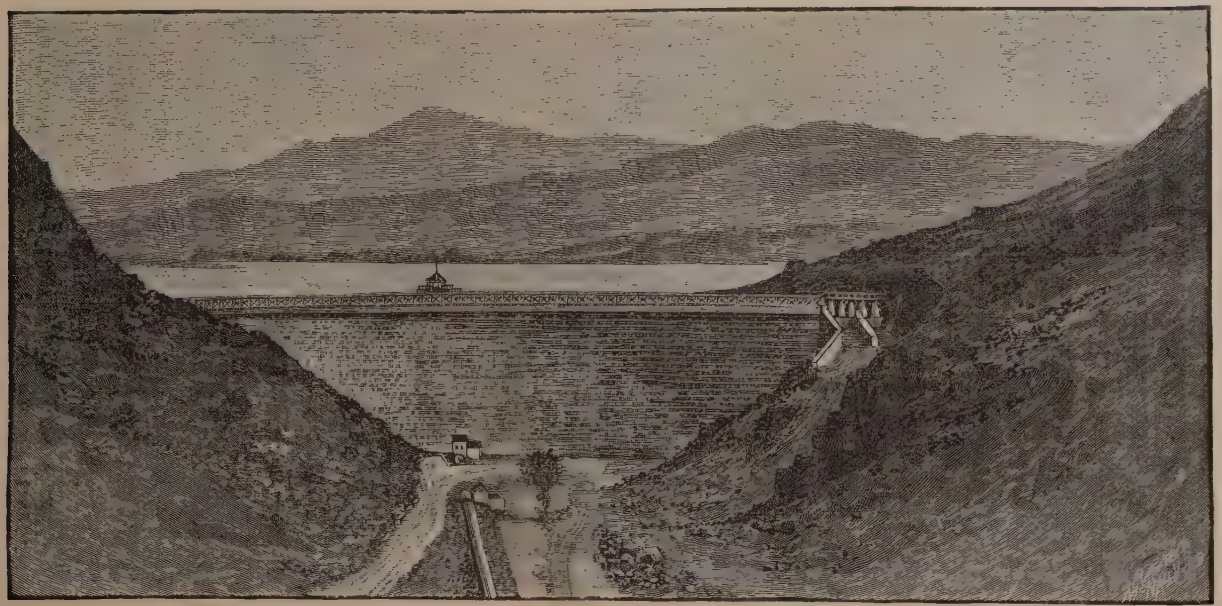
From Los Angeles, railroads go to Santa Monica, Long Beach, Redondo Beach, and southward to San Diego. Along this latter route the stations stand, as a rule, at less than 200 feet elevation, being mostly in low valleys or close to the sea-shore. From any of these stations roads lead up past the valleys and into the hills. From Ocean-

side, at the mouth of the San Luis Rey Valley, good wagon-roads go to Pala, the seat of one of the second or inland line of missions established by the Franciscan friars in the foot-hills near to the Agua Tibia Springs. To the north of Oceanside, on the Temecula Cañon route in the Santa Rosa Mountains, the scenery reminds one of the upper valley of the Po, in Northern Italy, in its valleys, and of the Tyrolese Alps in its mountains. Whatever barrenness may accompany the many hill-sides and plains or the masses of granite mountains that are to be met in various parts of Southern California, along the many railroad routes, it must not be overlooked that they do not as yet penetrate into the elevations or highlands, where an entirely different condition of scenery exists, and which are as yet only reached by wagon-roads.

At San Diego the foot-hills are at a considerable distance in the interior, the interval being taken up by a series of plains and valleys separated by ranges of low hills. From this point roads lead into the interior and into Mexico; by rail one may go to the first range of the foot-hills directly to the eastward, and by a motor-road to the Mexican boundary-line and to the Sweetwater Lake, where is situated the great dam of that name; the motor going a few miles to the eastward of the dam, takes the traveler to the foot of the Jamul Valley, a locality of less than 1000 feet elevation, and which produces the finest oranges in the States. Alpine is a favorite health resort, at an elevation of 2200 feet eastward from San Diego, and the Cuyamaca and intervening valleys, at varying elevations from 1800 to 4500 feet, are favorite resorts for invalids, tourists, and campers. Fisher's Hotel, near the Santa Ysabel Valley, at an elevation of about 2000 feet, is a favorite resort.

ARE ALTITUDES NECESSARY TO THE CONSUMPTIVE?

Speaking in a medical sense, and viewing altitudes in a therapeutic light, it must not be overlooked that many pulmonary invalids have but too often some cardiac or renal difficulty as a primary affection or starting-point for the phthisical condition; and, whilst to the simply hereditary tubercular, or to some cases of incipient tuberculosis, even the elevation of Tamarack Valley may be of essential benefit, it requires a nice discrimination and a broad-minded view of cases, taken in all their aspects, not to send a man even to a 2500-foot elevation when his better chance for life remains in his sticking to sea-level. The condition of the heart and kidneys is often of more importance than that of the lung. In this connection Professor Hirsch, of Berlin, in commenting upon the climate and altitude cure of consumption, asks us not to forget, in our warfare against the bacillus or a phthisical lung, that we have a sick man besides to look after—something which is too often neglected and overlooked. Redner, at the same meeting (the Tenth International Medical Congress), also observed "that in considering climate we should not confine our attention to the question whether the bacillus can live there or not, or even breed spores or not; but that we should rather turn our inquiries into what is the effect of the climatic conditions on the general health of the individual and on his resisting powers." Dr. Huggard, of Davos, who took part in the discussion that followed the reading of a climatic paper by the writer, observed that we paid too much attention to precise meteorological conditions on the one hand, and to the too precise morbid physical condition on the other, and not enough to the general resistive force or power of tissue change in the patient.



SWEETWATER DAM AND LAKE. SEVEN MILES FROM NATIONAL CITY. HEIGHT OF DAM, NINETY FEET.

EXAMPLES FURNISHED BY THE ANAHUAC PLATEAU.

Quoting from Jourdanet, in regard to the highlands on the Anahuac Plateau, we observe that diseases there assume a greater fatality, owing to the less resisting powers of the system. Furthermore, we there learn that rheumatic and heart affections, pneumonia, pleurisy, diarrhœa, and dysentery, and, lastly, uterine diseases are all quite prevalent. Typhus fever there assumes, at times, the form of a virulent endemic disease, and seems at all times to stand ready to assail its victim when he is already handicapped by some of the other diseases above mentioned.

Now, the plateau of Anahuac, on which is situated the City of Mexico, stands at an elevation of over 6000 feet, and is probably as well favored, in a climatic point of view, as any like altitude; the temperature being, on the whole, temperate, and with the exercise of judgment, choice can be made with regard to point of compass exposure and residence location, so as to render the immediate surrounding atmosphere as equable as possible.

If mere altitude is, therefore, so beneficial and desirable as it is represented to be, it should, on these plains, exhibit its benefits to the best advantage; it makes, on the contrary, quite a different showing, as, in addition to the classes of diseases above named, we learn that digestion is there carried on but with difficulty, and that the prevailing anæmia and muscular debility—lack of physical tone and vigor—and mental languor do not make the plateau a desirable residence locality, especially when we are told that these low and morbid conditions of physical and functional life disappear on descending to lower levels or in ascending to El Guarda,—

some 2000 feet higher,—all of which emphasizes the need of considering *locality* as something of importance.

AERIAL-VOYAGE METEOROLOGY NOT APPLICABLE TO TERRA FIRMA.

Considerable confusion has been introduced into the subject of medical climatology by the introduction into its discussion of details which can have no possible bearing upon each other. For instance, we often see references made to Glaisher's tables and experiments; while I admit the skill, perseverance, courage, and devotion of M. Glaisher in the cause of science, and do not pretend to deny the very important bearing that his discoveries and observations may have in their proper and appropriate application, I must object to their indiscriminate use in connection with medical climatology *on land;* here we have factors, that are absent in aërial meteorology, which completely alter matters. Glaisher himself observes that different observations—owing to the character and condition of clouds, mist, etc.—do not always give anything like the same relative condition of humidity at the same distance from the ground; a humidity, he finds, which also differs materially in different localities, irrespective of altitude. Nothing is of more interest to read than his graphic description of his noted ascent, on the 5th of September, 1862, from Wolverhampton, to an elevation of 29,000 feet, where he and his plucky assistant, Mr. Coxwell, nearly lost their lives. His "Voyages Aëriens" is full of interest and information; but it must be clearly discernible that, to apply his deductions in mid-air to the atmosphere on *terra firma*, we must first decide to ignore that the earth, trees, houses, and other surroundings, with the slant of the land, in reference to the point of the compass, and

the proximity and the character of bodies of water in the vicinity, have of themselves any modifying or factorial influence. It is straying away altogether too much from the principles of inductive or deductive philosophy and tending too much to dabbling in the speculative to introduce too much aërial meteorology into that of *terra firma.*

A south room in a brick building has not only the difference that the sun gives during the day, but the additional difference that the warm walls impart to the apartment during the night,—a difference that may hold for days, even when the sky is overcast. Of what possible advantage would it be to know the exact temperature of the air or its hygrometric condition in mid-air some 200 feet above the street? Neither the well nor the invalid are supposed to make a balloon ascension,—either for a residence or for pleasure. What we wish to know is the status of the air in the locality *in which he dwells;* in fact, we want to push our inquiries to the fullest extent, as implied in Angus Smith's expression, "the chemistry of climate," concerning the air in which he sleeps and habitually lives. Air of altitudes should be judged by the same principle as we would analyze a cellar-air—neither more nor less—and not by balloon meteorology, and on the result of these investigations we should base our opinion and advice.

CALIFORNIA ELEVATIONS DO NOT DIFFER MEDICALLY FROM THE LOWLANDS.

Southern California elevations have this in their favor, in regard to pulmonary affections: pneumonia, as will be more fully explained, does not occur, either as an accidental, intercurrent, or traumatic disease; nor is it ever seasonably endemic. The above applies to the

immediate sea-shore,—medium elevations, as well as to the highest altitudes. In the mountains, with warm days and cold nights, many follow the occupation of mining,—going down into deep shafts and into tunnels, where the atmosphere is damp and the temperature is necessarily high; and, although I have practiced to a considerable extent among the mining class, this form of disease does not appear on my note-book as occurring amongst them. I have attended a number of cases of accidents, fractured ribs, knife wounds, and gunshot wounds of the chest implicating the lungs, with but a single case of resulting pneumonia.

REMARKABLE CASES OF CHEST WOUNDS AND RECOVERIES.

One case in particular was that of J. C., aged 50 years, who, in a fit of irascibility, struck at an Indian with his clubbed shot-gun, which had been previously well and generously loaded with slugs and buck-shot for that particular Indian. The Indian parried the blow with a shovel, which, catching on the hammer, discharged the contents of the gun into the left breast of the holder of the gun. The charge struck just below the apex of the heart, carrying into the lung a miscellaneous assortment of cloth, wadding, lining, shirting, flannel, lead, paper, and burning powder. The muzzle of the gun not being more than a few inches from the person, the wound of exit was necessarily some three inches or more in diameter, through which protruded torn lung and muscle and a quantity of broken bones. Some of the clothing was taken out through the posterior wound, which was situated about two inches below the angle of the scapula and a little to the left of the spine, but much more came out, or rather up, by the mouth. The hæmorrhage from both wounds and the mouth was profuse,

and for a time threatened to extinguish the patient. I saw the man soon after the accident, and he made a

A JANUARY RACE ON A SOUTHERN CALIFORNIA SEA-BEACH.

By permission of Southern Pacific Company.

rapid recovery; so that in the course of four weeks he was out on mule-back. This case occurred at an alti-

tude of 4000 feet. I have notes of several other cases of gunshot and pistol-ball wounds penetrating the lung, occurring in the mountains,—some with and many more without hæmorrhage, but without a single occurrence of pneumonia.

I also have notes of the case of a sealer, accidentally shot on one of the sealing islands off the coast. The ball—a large, expansive rifle-bullet, which had already passed through the head of a seal—glancing from the water's surface, shot upward toward the rocks on which stood one of the crew; the shot struck the man on the ninth rib, near its articulation with the spine. It fractured the rib, traversed the lung, and imbedded itself in the anterior wall of the chest. The man was at once taken to the vessel and brought to San Diego. The hæmorrhage was great, but the man made a rapid recovery.

Some sixteen years ago I had an opportunity, not often afforded, of making an examination in the case of a traversing gunshot wound of the lung immediately after recovery. Hennen, in his "Military Surgery," laments never having had such an opportunity, as the sudden death of a person who has just made a perfect recovery after an extensive wound of the above order, and who is, besides, in otherwise good physical health, is, to say the least, a remarkably rare occurrence. In the above case it happened in this wise: A murder had been committed some thirty miles to the north of San Diego; the crime was traced to a Mexican and an Indian. In attempting to arrest the latter—who was armed and intrenched in a defensive position in the hills—he was shot through the left breast by a rifle-ball, which, striking near the left nipple, went straightly through the lung, going through the posterior chest-wall and imbedding

itself in the fleshy mass of muscles in the back between the spine and the shoulder-blade, where it was removed on his arrival at the jail, some hours afterward. In its passage the ball had evidently severed some large vessel, as the hæmorrhage was very severe and apt to recur on the least provocation. The jail-room is a large, quadrangular apartment, partly below ground, in the north side of the court-house, with high windows to the east and west, and with an asphaltum pavement.*

In this large room he was placed on a cot, the rest of the prisoners occupying bunks in the cells or iron tanks which were grouped in the central space. Dr. T. C. Stockton, of San Diego, assisted at the examination of the patient, at the extraction of the ball, through the subsequent treatment, and at the autopsy that followed immediately after his execution by hanging. The wounds of entrance and exit were easily discernible from their fresh, cicatricial appearance; diametrically corresponding to these was a thin, membranous, stringy-like tissue,

* In connection with this partly basement, asphaltum-paved, often-washed, and therefore often-damp, north-exposed jail-room, I have had a number of peculiar experiences. G., a man of 50, phthisical, both lungs affected, had been subject to hæmorrhages before coming to Southern California, having hectic fever and daily afternoon rise of temperature, night-sweats, copious expectoration, and harassing cough; was living on a ranch, at an altitude of 1800 feet; was very irritable and with but little appetite; digestion poor. While in this condition, and at his home, in an irascible moment, provoked by a person against whom he felt a strong, natural antipathy, he shot his offender, breaking his arm. Being arrested for this offense, he was lodged in jail, where he remained for several months. In this interval he lost his cough, night-sweats, expectoration, hectic, and all unfavorable symptoms; gained in appetite, digestion, assimilation, and weight, as well as in strength and endurance. I examined him just before his discharge, and all phthisical signs had disappeared from either lung.

I have seen a number of somewhat similar results with other chest cases among prisoners confined in the same jail, and while I would hardly counsel a consumptive to become hilariously and recklessly criminal, that he might be confined in the San Diego County Jail, as in a sanitarium, it would be wise for that class to fully appreciate that the thorough ventilation, cool atmosphere, enforced hygiene, regular hours, and diet inseparable from a sojourn in this particular jail can be duplicated with equal benefit elsewhere. The court-house is situated in a square, and at the time the jail or rear portion was surrounded by eucalyptus trees. The jail is on the low part of the city and not many feet above sea-level, and is, without an exception, one of the healthiest localities in existence. Having been its physician for over five years at one time, I had ample opportunity for observation.

traversing the lung—evidently the fast-disappearing cicatricial formation in the track of the rifle-ball wound. There were no pleural adhesions, effusion, pulmonary hepatization or air-cell obliteration of any kind, or if there had been they had disappeared. About two inches to the left of the wound of entrance, and at nearly the same distance to the left of the one in the back, there were two other wounds, showing a previous penetrating and traversing wound of the chest of the same side, the inner pleural evidences being plain; the man had told me that he had made a recovery from a like wound before, having the external wounds as evidence; and until the autopsy revealed the true nature of the former wound, neither Dr. Stockton nor myself believed but that the previous ball had merely followed the outer border of a rib. With the exception of a number of severe hæmorrhages and considerable pain, shock, and prostration, he made in the end a good and rapid recovery, at no time with a trace of pneumonia.

Several years ago I saw a soldier at the San Diego Barracks with Assistant-Surgeon Semig, the post-surgeon. The man was shot through the upper part of the left lung, the ball—a large, 45-calibre conical bullet—passing out at the back; in two weeks the man was out in the barrack-grounds.

In the great number of cases of the foregoing order that I have seen, there was only what resembled pneumonia in one case, this being a case of pistol-shot wound of the left breast, followed by an œdema that affected both lungs, and accompanied with intense pain and a feeling of suffocation on the affected side. Many of these cases have been under observation for periods of from two to sixteen years, and in not one case has there occurred any subsequent pneumonia, chronic disease of the

lung, or phthisis. The recoveries that have taken place in cases of pulmonary diseases contracted elsewhere have been as remarkable.

Nordhoff mentions the case of a consumptive friend, who had spent two winters at Nice and Mentone and one in the South, without any benefit or arrest of his disease, coming in desperation to Southern California one October, whom he met in Los Angeles, only on the following January, well, hearty, and hardly recognizable. Nordhoff's experience is but the oft-repeated experience of every observer, be he a physician or not, who has had any length of residence in Southern California.

There seems, undoubtedly, to be some elective selection or affinity as to locality and altitude in some of the cases; but, as a rule, the selection does not seem to be influenced by any specific morbid condition of the lung in the patient, which would denote that a certain form of morbid pulmonary phenomena require this or that altitude, and these indications seem rather prompted by the existence in the patient of those idiosyncrasies of body that are so noticeable in the neurotics—something that is more dependent on that morbid condition or cachexia that form a branch of the gouty or rheumatic diathesis in general—than on any local or specific morbid condition of the lung. I have often seen two patients presenting precisely the same local morbid pulmonary symptoms, who, from the above reasons, required entirely different localities, just as, on the other hand, we often see patients—for instance, one with a dry cough and the other with profuse expectoration and a moist cough—who do well in the same spot.

Attempts at making up statistical tables are, in their results, rather more obscuring than enlightening.

CABLE-ROAD PAVILION OF SAN DIEGO CABLE-ROAD COMPANY.

Invalids are a very restless and shifting-about class, and in a locality of the extent of Southern California, with as many distant resorts and widely distanced, favored localities, it is next to impossible to keep them long in sight. It often follows that an invalid whose condition prognosed a speedy end, and who was long believed defunct, suddenly turns up, well and hearty, in some sequestered spot, wherein he has been rusticating for months or a year. The custom of discharging all men from the army who have become apparently unfitted for future service tends to make even the army-hospital records very useless and misleading in this regard; that is, if taken from the books.

As an instance, I will give an illustration in point that recently fell to my notice: The patient, a soldier of the Eighth United States Cavalry, was sent to San Diego, with a consolidation of the upper lobe of the right lung, and with a diagnosis of incipient phthisis. In the course of a few months after his arrival at this post the cough, purulent expectoration, night-sweats, and pain had disappeared, and the soldier was, at his request, transferred to the infantry company then on duty at the barracks. While out rowing on the bay he was taken sick, and on the same day he was returned to the hospital with a relapse of his former complications, which soon developed in full force, with the addition of hæmorrhages. From this relapse he slowly recovered, and, when convalescent, was discharged as phthisical. He continued to improve, however, and, with the advent of fine weather in the East, he left for his home in Milwaukee. Fearing the effects of the Wisconsin climate, he returned to San Diego, where, in September of the present year, Dr. Burton, captain and assistant-surgeon United States army, and myself examined his chest, with

the result of finding that all tuberculous signs had disappeared, and that there existed not the least evidence of consolidation. The man was in good flesh and active, and, although we could not advise a return to a residence in a harsh climate or any trying occupation just at present, we cannot help but consider him a cured consumptive.

Dr. Huntington, the former post-surgeon at this army-post, gives the result of 15 cases that were sent to this hospital from various other army-posts to be treated for consumption. Of these, 3 were tubercular, and the others were consumptive, as the result of pneumonia. Of the first 3, one died within the month of his arrival, and the second within 8 months; the third was discharged cured. Of the remainder, 10 made recoveries and 2—although discharged cured—subsequently died elsewhere.

From the favorable results observed on the Southern California coast, Surg. Preston H. Bailhache, of the United States Marine-Hospital Service, has recommended the port of San Diego as a fit locality for the establishment of a marine hospital for the reception of the pulmonary patients of that service.

HEREDITARY CONSUMPTION AND CLIMATE.

In common with many, I believe that a constitutional tendency to tuberculosis may be transmitted, and that with many this trait or tendency in time becomes—under favorable climatic surroundings—an actual family habit, just as it will disappear under other climatic conditions. I also firmly believe in the infectious nature of tuberculosis, and am as firmly of the opinion that much of the so-called heredity—direct by actual transmission—is nothing more nor less than the result of otherwise avoid-

able infection, assisted in many cases by the inherited tendency in the patient. Especially do I believe this to be the case in many of those cases of disseminated tuberculosis that so often occur in children of tuberculous parentage. As to the manner of infection—leaving aside the infection through food or drink—there is a mass of conflicting testimony. Dr. W. H. Geddings mentions that the negroes of Aitken, S. C., who are engaged in beating out the carpets that have been used during the season in the rooms occupied by the consumptives, although exposed to the inhalation of the dust from dried phthisical sputa, nevertheless escape infection; while the women of the same class, who are engaged in washing the linen of the invalids, are more apt to infection. On the other hand, much stress is laid upon the dangers that this same dried sputa subjects persons to who happen to be exposed to its influence in street- or railroad- cars, stores, or the street. In Southern California the constant daily sunshine and almost constant movement of the air, and the absence, that is so remarkable, of any evidences of tubercular infection, impress one with the truth of Koch's assertion that the bacillus is but very short-lived and harmless if exposed for but a short space of time to the free action of sunlight and air. Be that as it will, it is a certainty that there is here an utter absence of hereditary consumption, or of that propagated by infection. Neither have I seen any phthisis following on any lung injury, severe physical injury or surgical operation, nor on any wasting sickness.

During a long course of observation, I have seen but one case of what might be taken for tubercular meningitis; one parent was tubercular, and, beyond this, from the history of the case, it was at the time a question with

OLD MAN, 110 YEARS OF AGE. 155

me whether the case was not one due originally to purely uræmic causes. I have seen any number of children, born of parents who were, or had previously been, tuberculous, without one resulting case of apparent hereditary transmission or of infection. This wonderful result, here obtained without any other sacrifice, and only elsewhere at the cost of incurring other dangers, has been ascribed to the highly ozonized condition of the air of our sea-shore and mountains. A careful reading of Prof. J. F. Baldwin's essay on "The Relations of Ozone to Disease" will have a tendency, however, to cause a depreciation of our ideas of ozone—either as a germ destroyer or as a disinfectant—and relegate our germicidal hopes back to the simple action of the free sweep of the sea-winds and to the longest possible hours of bright sunshine. The low temperature; dry, warm soil; steady, cool winds; bright sunshine, and absence of any and of all deteriorating elements whereby a tuberculous tendency may be engendered, are, in all probability, the real factors in the exemption to the disease enjoyed by the inhabitants of Southern California.

PNEUMONIA AND OUR CLIMATE.

During a practice of nineteen years in Southern California I have seen but two cases of pneumonia. By pneumonia I refer to those congestions of the lung that are sudden and vehement, and are accompanied by a high degree of fever and exudation, and are either followed by resolution or softening, and not to the last and closing act of the drama that but too often closes the career of the victim of diabetes, of valvular disease, or of a soft and fatty heart, wherein the lungs simply undergo a passive hyperæmia, filling up like sponges,—a condition, even if fatal, as little entitled to be returned

as pneumonia as it is heart-failure. In this latter class of cases the condition is one of stasis, and not one of active feverish congestion; it is, as a rule, the precursor of a gradual death, and in the many post-mortem examinations that I have made in such cases there has never appeared the least evidence of exudation or of the softening peculiar to pneumonia. Pneumonia, such as I have seen in army practice, in the Philadelphia hospitals, and in civil practice in France and in Minnesota or Wisconsin, takes down its victim with an acute, inflammatory, sudden congestion, which often, and at once, threatens the life of the patient, be he a child, in the prime of life, or already among the aged. The disease runs, as a rule, a definite course; attacks all ages. The majority make good recoveries; while, on the other hand, that morbid complication which is here but too often called pneumonia does not attack children or persons in health, and recoveries are, from the very nature of the condition, well-nigh impossible.

I have taken the pains to investigate into the history of the cases reported at the health office as having died of the disease, and it has invariably been found that, although there had been an unquestioned congestion of the lung, the congestion had, as a rule, been more passive than active, and that it was more as the closing act in a long drama of disease and suffering than an independent, separate, or acute disease. It has often happened that the physician has not been called until this last and closing act or stage of the disease process had been reached, and then only for the express purpose of relieving the pulmonary distress. I well remember being called suddenly to attend a patient in the absence of the regular medical attendant; the patient had just had a "fit," I was told; on my arrival at the bedside I further learned

that he had been under treatment for pneumonia, which had been slowly coming on for some weeks prior to the calling of the family physician. An investigation into the case developed that the "fit" was a uræmic convulsion, and that diabetes had existed for months without causing the patient sufficient anxiety or alarm to induce him to consult a physician. It was only with labored and painful respiration and the occurrence of some hæmorrhage from the bronchial mucous membrane that advice was sought for. This case was recorded as being a death from pneumonia.

On another occasion I met a gentleman at the railway-station as I was about to embark on the train to see a patient some distance out of town. He was considerably worried about business matters; two parties were threatening to bring two separate suits against him for some personal injuries received while in his employ. The damages they claimed, he informed me, were more than he was worth, and, while he had no expectation or fear that the suits would be decided against him, he, nevertheless, felt that their occurrence at the time would assist materially to further complicate his already unsatisfactory condition of affairs. He had a worried and careworn look and a sighing respiration; he had lost sleep; had neither appetite nor an active digestion; his pulse was intermittent and of a fluctuating impulse and volume. I had attended the gentleman some years previously, and was aware that he labored under the disadvantage of degenerated kidneys and of a softening heart, and plainly saw that the latter organ was now giving way to the mental worry and physical strain, and that already his lungs showed symptoms of a slight hyperæmia. Absolute rest might have averted the approaching end, but this I could not prevail upon him to take; I never saw him again alive, and subsequently learned that he

died of pneumonia some ten days after our interview. I will not say that this passive congestion can take place at all times without creating such a disturbance or an attempted resentment on the part of the lung that it might readily be taken for pneumonia, but I must object, on general principles, against classing such a condition with either acute or chronic pneumonia.

The two cases of the disease which I have seen were cases of double pneumonia, both consequent upon sudden chilling when overheated. In both, the onset was sudden and nearly fatal at the beginning; but in the end they made perfect recoveries. The first of these two cases I attended with Dr. R. J. Gregg, the patient being a butcher, and the second was that of an English sailor, whom I attended in the Marine Hospital with Dr. T. C. Stockton. I have already noticed the remarkable exemption to pneumonia that is experienced in cases of chest wounds, and it may here be added that this pulmonary complication is also absent as a sequela to any severe or wasting disease; neither have I seen pneumonia occur as an intercurrent complication. The late wide-spread epidemic of the grippe has fully exemplified the immunity enjoyed by the section in the above regard; for, whilst in the East and West the death-rates from pneumonia and other pulmonary diseases greatly increased, and many were started on the unwelcome road of incipient tuberculosis, those living in Southern California can hardly be said to have suffered any from the grippe beyond its mere immediate fever and inconveniences,—a result that, when it is taken into consideration that a large portion of the population is made up of confirmed, improving, and cured invalids,—a class who elsewhere could no more resist the deadly influence of the grippe than salt can withstand the deliquescing effects of water,—is, to say

the least, something remarkable. In some cases, much more broken down than the general average, victims of long-existing interstitial nephritis or of a rheumatic or gouty kidney, the recovery has, of necessity, not been as rapid or as perfect; but, take it on the whole, what is known as the grippe-lung or the grippe-kidney can hardly be said to have been left behind as a *souvenir* of the visit of the epidemic. The absence of pneumonia during the grippe epidemic is the best evidence that it is not fostered by the climate.

HOTEL ARCADIA, SANTA MONICA, CAL.

SEASON OF 1891-1892.

CATALOGUE

OF THE

MEDICAL PUBLICATIONS

OF

F. A. DAVIS,
MEDICAL PUBLISHER AND BOOKSELLER,
1231 FILBERT STREET,
PHILADELPHIA, PA.

BRANCH OFFICES:

NEW YORK CITY—117 W. Forty-Second St.

CHICAGO—24 Lakeside Building, 214-220 S. Clark Street.

ATLANTA—69 Old Capitol.

LONDON, ENG.—40 Berners Street, Oxford Street, W.

In place of repeated revisions, Supplements to this Catalogue will be issued at intervals of about every three months. These supplements will be regularly mailed to all those who will favor us with their name and address.

Order from Nearest Office.

For Sale by all Booksellers.

SPECIAL NOTICE.

PRICES of books, as given in our catalogues and circulars, include full prepayment of postage, freight, or express charges. Customers in Canada and Mexico must pay the cost of duty, in addition, at point of destination.

N. B.—Remittances should be made by Express Money-Order, Post-Office Money-Order, Registered Letter, or Draft on New York City, Philadelphia, Boston, or Chicago.

We do not hold ourselves responsible for books sent by mail; to insure safe arrival of books sent to distant parts, the package should be registered. Charges for registering (at purchaser's expense), ten cents for every four pounds, or less.

INDEX TO CATALOGUE.

PAGE

Annual of the Universal Medical Sciences 27, 28, 29

Anatomy.

Practical Anatomy—Boenning 4
Structure of the Central Nervous System—Edinger 8
Charts of the Nervo-Vascular System—Price and Eagleton 17
Synopsis of Human Anatomy—Young . . 25

Bacteriology.

Bacteriological Diagnosis—Eisenberg . . 8

Clinical Charts.

Improved Clinical Charts—Bashore . . . 3

Consumption.

Consumption: How to Prevent it, etc.—Davis 7

Domestic Hygiene, etc.

The Daughter: Her Health, Education, and Wedlock—Capp 5
Consumption: How to Prevent it, etc.—Davis 7
Plain Talks on Avoided Subjects—Guernsey 9
Heredity, Health, and Personal Beauty—Shoemaker 21

Electricity.

Practical Electricity in Medicine and Surgery—Liebig and Rohé 12
Electricity in the Diseases of Women—Massey 13

Fever.

Fever: its Pathology and Treatment—Hare 10
Hay Fever—Sajous 19

Gynecology.

Lessons in Gynecology—Goodell 9

Heart, Lungs, Kidneys, etc.

Diseases of the Heart, Lungs, and Kidneys—Davis 7
Diseases of the Heart and Circulation in Children—Keating and Edwards . . . 12
Diabetes: its Cause, Symptoms, and Treatment—Purdy 17

Hygiene.

American Resorts—James 11
Text-Book of Hygiene—Rohé 18

Materia Medica and Therapeutics.

Hand-Book of Materia Medica, Pharmacy, and Therapeutics—Bowen . . . 4
Ointments and Oleates—Shoemaker . . . 21
Materia Medica and Therapeutics—Shoemaker 22
International Pocket Medical Formulary—Witherstine 26

Miscellaneous.

PAGE

Book on the Physician Himself—Cathell . 5
Oxygen—Demarquay and Wallian 7
Record-Book of Medical Examinations for Life Insurance—Keating 11
The Medical Bulletin, Monthly 13
Physician's Interpreter 15
Circumcision—Remondino 18
Medical Symbolism—Sozinskey 23
International Pocket Medical Formulary—Witherstine 26
The Chinese: Medical, Political, and Social—Coltman 31
A, B, C of the Swedish System of Educational Gymnastics—Nissen 32
Lectures on Auto-Intoxication—Bouchard 32

Nervous System, Spine, etc.

Spinal Concussion—Clevenger 6
Structure of the Central Nervous System—Edinger 8
Epilepsy: its Pathology and Treatment—Hare 10
Lectures on Nervous Diseases—Ranney . 30

Obstetrics.

Childbed: its Management; Diseases and Their Treatment—Manton 13
Eclampsia—Michener and others 15
Obstetric Synopsis—Stewart 24

Pharmacology.

Abstracts of Pharmacology—Wheeler . . 25

Physiognomy.

Practical and Scientific Physiognomy—Stanton 30

Physiology.

Physiology of the Domestic Animals—Smith 23

Surgery and Surgical Operations.

Circumcision—Remondino 18
Principles of Surgery—Senn 20

Swedish Movement and Massage.

Swedish Movement and Massage Treatment—Nissen 15

Throat and Nose.

Journal of Laryngology and Rhinology . 11
Hay Fever—Sajous 19
Diphtheria, Croup, etc.—Sanne 19
Lectures on the Diseases of the Nose and Throat—Sajous 31

Venereal Diseases.

Syphilis: To-day and in Antiquity—Buret 4
Neuroses of the Genito-Urinary System in the Male—Ultzmann 24

Veterinary.

Age of the Domestic Animals—Huidekoper 32
Physiology of the Domestic Animals—Smith 23

Visiting-Lists and Account-Books.

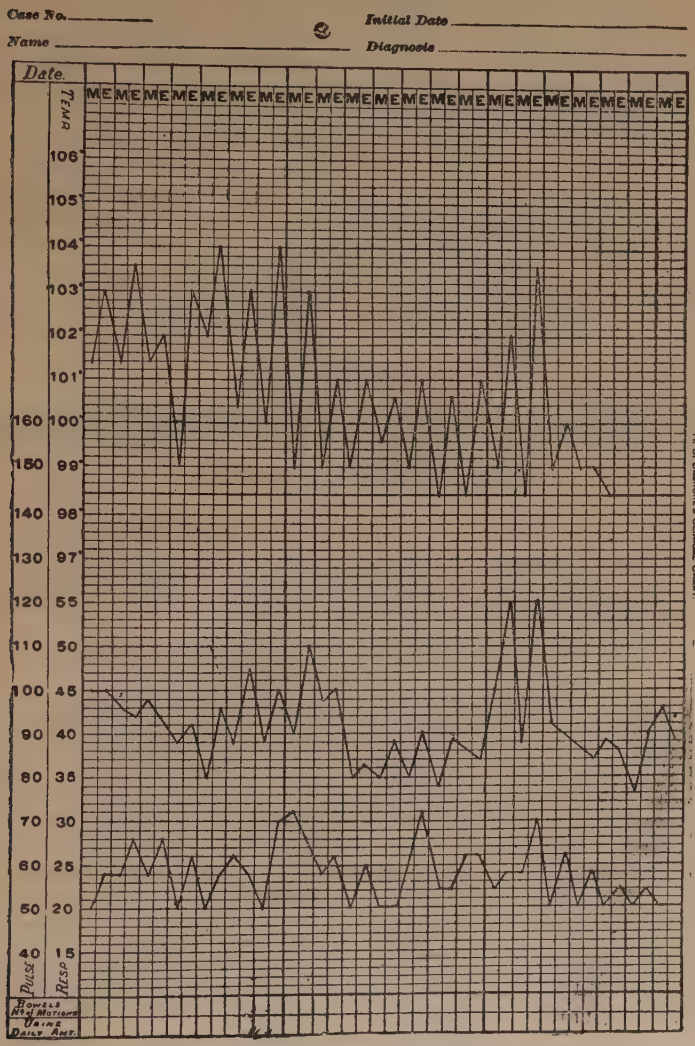
Medical Bulletin Visiting-List or Physicians' Call-Record 14
Physicians' All-Requisite Account-Book . 16

BASHORE'S IMPROVED CLINICAL CHART.

For the SEPARATE PLOTTING of TEMPERATURE, PULSE, and RESPIRATION.

Designed for the Convenient, Accurate, and Permanent Daily Recording of Cases in Hospital and Private Practice.

By HARVEY B. BASHORE, M.D.



COPYRIGHTED, 1888, BY F. A. DAVIS.

50 Charts, in Tablet Form. **Size, 8 x 12 inches.**

Price, in the United States and Canada, Post-paid, 50 Cents, Net; Great Britain, 2s. 6d.; France. 3 fr. 60.

The above diagram is a little more than one-fifth (1-5) the actual size of the chart and shows the method of plotting, the upper curve being the Temperature, the middle the Pulse, and the lower the Respiration. By this method a full record of each can easily be kept with but one color ink.

It is so arranged that all practitioners will find it an invaluable aid in the treatment of their patients.

On the back of each chart will be found ample space conveniently arranged for recording "Clinical History and Symptoms" and "Treatment."

By its use the physician will secure such a complete record of his cases as will enable him to review them at any time. Thus he will always have at hand a source of individual improvement and benefit in the practice of his profession, the value of which can hardly be overestimated.

(F. A. DAVIS, Medical Publisher, Philadelphia, Pa., U.S.A.)

BOENNING

A Text-Book on Practical Anatomy.

INCLUDING A SECTION ON SURGICAL ANATOMY.

By HENRY C. BOENNING, M.D., Lecturer on Anatomy and Surgery in the Philadelphia School of Anatomy; Demonstrator of Anatomy in the Medico-Chirurgical College; Demonstrator of Anatomy in the Philadelphia Dental College; Lecturer on Diseases of the Rectum in the Medico-Chirurgical College, etc., etc.

Fully illustrated throughout with about 200 Wood-Engravings. In one handsome Octavo volume, printed in extra-large, clear type, making it specially desirable for use in the dissecting room. Nearly 500 pages. Substantially bound in Extra Cloth. Also in Oil-Cloth, for use in the dissecting-room without soiling.

Price, post-paid, in the United States, $2.50, net; Canada (duty paid), $2.75, net; Great Britain, 14s.; France, 16 fr. 20.

BOWEN

Hand-Book of Materia Medica, Pharmacy, and Therapeutics.

By CUTHBERT BOWEN, M.D., B.A., Editor of "Notes on Practice."

The second volume in the *Physicians' and Students' Ready Reference Series.* One 12mo volume of 370 pages. Handsomely bound in Dark-Blue Cloth.

Price, post-paid, in the United States and Canada, $1.40, net; in Great Britain, 8s. 6d.; in France, 9 fr. 25.

EXTRACT FROM THE PREFACE.—"While this is essentially a STUDENT'S MANUAL, a large amount of matter has been incorporated which, it is hoped, will render it a useful reference-book to the YOUNG GRADUATE who is just entering on his professional career, and more particularly the individual whose sphere of work demands a more practical acquaintance with pharmaceutical processes than is required of the ordinary city practitioner. Great care has been taken throughout the book to familiarize the student with the best methods of administering the various drugs he will be called upon to use, and with this object a large number of standard prescriptions have been selected from the works of the most eminent authorities, which he can either adopt, with modifications to suit particular cases, or use as models on which to construct his own formulæ."

This excellent manual comprises in its 366 pages about as much sound and valuable information on the subjects indicated in its title as could well be crowded into the compass. The book is exhaustively and correctly indexed, and of a convenient form. The paper, press-work, and binding are excellent, and the typography (long primer and brevier) is highly to be commended, as opposed to the nonpareil and agate usually used in compends of this sort, and which are destructive to vision and temper alike.—*St. Louis Med. and Surg. Jour.*

In going through it, we have been favorably impressed by the plain and practical suggestions in regard to prescription writing, and the metric system, and the other things which must be known in order to write good and accurate prescriptions.—*Medical and Surgical Reporter*

BURET

Syphilis: To-day and in Antiquity.

By DR. F. BURET (Paris). Translated from the French, with the author's permission, by A. H. OHMANN-DUMESNIL, A.M., M.D., Professor of Dermatology and Syphilology in the St. Louis College of Physicians and Surgeons.

To be completed in three 12mo volumes. Volume I, Syphilis in Antiquity. IN PRESS. READY IN OCTOBER, 1891.

CAPP

The Daughter. Her Health, Education, and Wedlock.

HOMELY SUGGESTIONS TO MOTHERS AND DAUGHTERS.

By WILLIAM M. CAPP, M.D., Philadelphia. This is just such a book as a family physician would advise his lady patients to obtain and read. It answers many questions which every busy practitioner of medicine has put to him in the sick-room at a time when it is neither expedient nor wise to impart the information sought.

It is complete in one beautifully printed (large, clear type) 12mo volume of 150 pages. Attractively bound in Extra Cloth.

Price, post-paid, in the United States and Canada, $1.00, net; In Great Britain, 5s. 6d.; France, 6 fr. 20.

In the 144 pages allotted to him he has compressed an amount of homely wisdom on the physical, mental, and moral development of the female child from birth to maturity which is to be found elsewhere in only the great book of experience. It is, of course, a book for mothers, but is one so void of offense in expression or ideas that it can safely be recommended for all whose minds are sufficiently developed to appreciate its teachings.—*Philadelphia Public Ledger.*

Many delicate subjects are treated with skill and in a manner which cannot strike any one as improper or bold. The absolute ignorance in which most young girls are allowed to exist, even until adult life, is often productive of much misery, both mental and physical. Quite a number of books written by physicians for popular use have been prepared in such a way that the professional man can read between the lines strong bids for popular favor, etc. These objectionable features will not be found in Dr. Capp's *brochure*, and for this reason it is worthy the confidence of physicians.—*Medical News.*

CATHELL

Book on the Physician Himself

AND THINGS THAT CONCERN HIS REPUTATION AND SUCCESS.

By D. W. CATHELL, M.D., Baltimore, Md. Being the NINTH EDITION (enlarged and thoroughly revised) of the "Physician Himself, and what he should add to his Scientific Acquirements in order to Secure Success." In one handsome Octavo Volume of 298 pages, bound in Extra Cloth.

Thousands of physicians have won success in their chosen profession through the aid of this invaluable work.

This remarkable book has passed through eight (8) editions in less than five years. It has just undergone a thorough revison by the author, who has added much new matter covering many points and elucidating many excellent ideas not included in former editions.

Price, post-paid, in the United States and Canada, $2.00, net; in Great Britain, 11s. 6d.; France, 12 fr. 40.

I am most favorably impressed with the wisdom and force of the points made in "The Physician Himself," and believe the work in the hands of a young graduate will greatly enhance his chances for professional success.—*From Prof. D. Hayes Agnew, Phila., Pa.*

We strongly advise every actual and intending practitioner of medicine or surgery to have "The Physician Himself," and the more it influences his future conduct the better he will be.—*From the Canada Medical and Surgical Journal, Montreal.*

In the present edition the entire work has been revised and some new matter introduced. The publisher's part is well done; paper is good and the print large; altogether it is a very readable and enjoyable book.—*Montreal Medical Journal*

We have read it carefully and regret much that we had not done so earlier and followed its precepts. The book is full of good advice. Get it at once.—*Pacific Record of Medicine and Surgery.*

We cannot imagine a more profitable investment for the junior practitioner than the purchase and careful study of "The Physician Himself."—*Occidental Medical Times.*

To the physician who has discovered that there is something else besides dry book-learning needed to make him a desirable visitor at the bedside, we commend this volume, that he may assimilate some of the ready crystallized worldly wisdom which otherwise he may be many years acquiring by natural processes.—*North Carolina Medical Journal.*

CLEVENGER

Spinal Concussion.

SURGICALLY CONSIDERED AS A CAUSE OF SPINAL INJURY, AND NEUROLOGICALLY RESTRICTED TO A CERTAIN SYMPTOM GROUP, FOR WHICH IS SUGGESTED THE DESIGNATION ERICHSEN'S DISEASE, AS ONE FORM OF THE TRAUMATIC NEUROSES.

By S. V. CLEVENGER, M.D., Consulting Physician Reese and Alexian Hospitals; Late Pathologist County Insane Asylum, Chicago; Member of numerous American Scientific and Medical Societies; Collaborator American Naturalist, Alienist and Neurologist, Journal of Neurology and Psychiatry, Journal of Nervous and Mental Diseases; author of "Comparative Physiology and Psychology," "Artistic Anatomy," etc.

This work is the outcome of five years' special study and experience in legal circles, clinics, hospital and private practice, in addition to twenty years' labor as a scientific student, writer, and teacher.

The literature of Spinal Concussion has been increasing of late years to an unwieldy shape for the general student, and Dr. Clevenger has in this work arranged and reviewed all that has been done by observers since the days of Erichsen and those who preceded him.

There are abundant illustrations, particularly for Electro-diagnosis, and to enable a clear comprehension of the anatomical and pathological relations.

The Chapters are: I. Historical Introduction; II. Erichsen on Spinal Concussion; III. Page on Injuries of the Spine and Spinal Cord; IV. Recent Discussions of Spinal Concussion; V. Oppenheim on Traumatic Neuroses; VI. Illustrative Cases from Original and all other Sources; VII. Traumatic Insanity; VIII. The Spinal Column; IX. Symptoms; X. Diagnosis; XI. Pathology; XII. Treatment; XIII. Medico-legal Considerations.

Other special features consist in a description of modern methods of diagnosis by Electricity, a discussion of the controversy concerning hysteria, and the author's original pathological view that the lesion is one involving the spinal sympathetic nervous system. In this latter respect entirely new ground is taken, and the diversity of opinion concerning the functional and organic nature of the disease is afforded a basis for reconciliation.

Every Physician and Lawyer should own this work.

In one handsome Royal Octavo Volume of nearly 400 pages, with thirty Wood-Engravings.

Price, post-paid, in United States and Canada, $2.50, net; in Great Britain, 14s.; in France, 15 fr.

The reader will find in this book the best discussion and summary of the facts on this topic, which will make it very valuable to every physician. For the specialist it is a text-book that will be often consulted.—*The Journal of Inebriety.*

The work comes fully up to the demand, and the law and medical library, to be complete, cannot be without it.—*Southern Medical Record.*

This work really does, if we may be permitted to use a trite and hackneyed expression, "fill a long-felt want." The subject is treated in all its bearings; electro-diagnosis receives a large share of attention, and the chapter devoted to illustrative cases will be found to possess especial importance. The author has some original views on pathology. —*Medical Weekly Review.*

DAVIS

Consumption: How to Prevent it, and How to Live with it.

ITS NATURE, CAUSES, PREVENTION, AND THE MODE OF LIFE, CLIMATE, EXERCISE, FOOD AND CLOTHING NECESSARY FOR ITS CURE.

By N. S. DAVIS, JR., A.M., M.D., Professor of Principles and Practice of Medicine in Chicago Medical College; Physician to Mercy Hospital; Member of the American Medical Association, Illinois State Medical Society, etc., etc.

12mo. IN PRESS.

DAVIS

Diseases of the Heart, Lungs, and Kidneys.

By N. S. DAVIS, JR., A.M., M.D., Professor of Principles and Practice of Medicine in Chicago Medical College; Physician to Mercy Hospital; Member of the American Medical Association, Illinois State Medical Society, etc., etc.

In one neat 12mo volume. *No. in the Physicians' and Students' Ready-Reference Series.* IN PREPARATION.

DEMARQUAY

On Oxygen. A Practical Investigation of the Clinical and Therapeutic Value of the Gases in Medical and Surgical Practice,

WITH ESPECIAL REFERENCE TO THE VALUE AND AVAILABILITY OF OXYGEN, NITROGEN, HYDROGEN, AND NITROGEN MONOXIDE.

By J. N. DEMARQUAY, Surgeon to the Municipal Hospital, Paris, and of the Council of State; Member of the Imperial Society of Surgery; Correspondent of the Academies of Belgium, Turin, Munich, etc; Officer of the Legion of Honor, Chevalier of the Orders of Isabella-the-Catholic and of the Conception, of Portugal, etc. Translated, with notes, additions, and omissions, by SAMUEL S. WALLIAN, A.M., M.D., Member of the American Medical Association; Ex-President of the Medical Association of Northern New York; Member of the New York County Medical Society, etc.

In one handsome Octavo Volume of 316 pages, printed on fine paper, in the best style of the printer's art, and illustrated with 21 Wood-Cuts.

Price, post-paid, in United States, Cloth, $2.00, net; Half-Russia, $3.00, net. In Canada (duty paid), Cloth, $2.20, net; Half-Russia, $3.30, net. In Great Britain, Cloth, 11s. 6d.; Half-Russia, 17s. 6d. In France, Cloth, 12 fr. 40; Half-Russia, 18 fr. 60.

For some years past there has been a growing demand for something more satisfactory and more practical in the way of literature on the subject of what has, by common consent, come to be termed "Oxygen Therapeutics." On all sides professional men of standing and ability are turning their attention to the use of the gaseous elements about us as remedies in disease, as well as sustainers in health. In prosecuting their inquiries, the first hindrance has been the want of any reliable, or in any degree satisfactory, literature on the subject.

This work, translated in the main from the French of Professor Demarquay, contains also a very full account of recent English, German, and American experiences, prepared by Dr. Samuel S. Wallian, of New York, whose experience in this field antedates that of any other American writer on the subject.

This is a handsome volume of 300 pages, in large print, on good paper, and nicely illustrated. Although nominally pleading for the use of oxygen inhalations, the author shows in a philosophical manner how much greater good physicians might do if they more fully appreciated the value of fresh air exercise and water, especially in diseases of the lungs, kidneys, and skin. We commend its perusal to our readers.—*The Canada Medical Record.*

The book should be widely read, for to many it will bring the addition of a new weapon to their therapeutic armament.—*Northwestern Lancet.*

Altogether the book is a valuable one, which will be found of service to the busy practitioner who wishes to keep abreast of the improvements in therapeutics.—*Medical News.*

EISENBERG

Bacteriological Diagnosis.

TABULAR AIDS FOR USE IN PRACTICAL WORK.

By JAMES EISENBERG, Ph.D., M.D., Vienna. Translated and augmented, with the permission of the author, from the latest German Edition, by NORVAL H. PIERCE, M.D., Surgeon to the Out-Door Department of Michael Reese Hospital; Assistant to Surgical Clinic, College of Physicians and Surgeons, Chicago, Ill.

This book is a novelty in Bacteriological Science. It is arranged in a tabular form in which are given the specific characteristics of the various well-established bacteria, so that the worker may, at a glance, inform himself as to the identity of a given organism. They then serve the same function to the Bacteriologist as does the "Chemical Analysis Chart" to the chemist, and the one will be found as essential as the other.

THE GREATEST care has been taken to bring the work up to the present aspect of Bacteriology.

In one Octavo volume, handsomely bound in Cloth. READY SOON.

Price, post-paid, in the United States and Canada, $1.50, net; in Great Britain, 8s. 6d.; in France, 9 fr. 35.

EDINGER

Twelve Lectures on the Structure of the Central Nervous System.

FOR PHYSICIANS AND STUDENTS.

By DR. LUDWIG EDINGER, Frankfort-on-the-Main. Second Revised Edition. With 133 Illustrations. Translated by WILLIS HALL VITTUM, M.D., St. Paul, Minn. Edited by C. EUGENE RIGGS, A.M., M.D., Professor of Mental and Nervous Diseases, University of Minnesota; Member of the American Neurological Association.

The illustrations are exactly the same as those used in the latest German edition (with the German names translated into English), and are very satisfactory to the Physician and Student using the book.

The work is complete in one Royal Octavo volume of about 250 pages, bound in Extra Cloth.

Price in United States and Canada, post-paid, $1.75, net; Great Britain, 10s.; France, 12 fr. 20.

One of the most instructive and valuable works on the minute anatomy of the human brain extant. It is written in the form of lectures, profusely illustrated, and in clear language. The book is worthy of the highest enconiums, and will, undoubtedly, command a large sale.—*The Pacific Record of Medicine and Surgery.*

Since the first works on anatomy, up to the present day, no work has appeared on the subject of the general and minute anatomy of the central nervous system so complete and exhaustive as this work of Dr. Ludwig Edinger. Being himself an original worker, and having the benefits of such masters as Stilling, Weigeit, Geilach, Meynert, and others, he has succeeded in transforming the mazy wilderness of nerve fibres and cells into a district of well-marked pathways and centres, and by so doing has made a pleasure out of an anatomical bugbear.—*The Southern Medical Record.*

Every point is clearly dwelt upon in the text, and where description alone might leave a subject obscure clever drawings and diagrams are introduced to render misconception of the author's meaning impossible. The book is eminently practical. It unravels the intricate entanglement of different tracts and paths in a way that no other book has done so explicitly or so concisely. — *Northwestern Lancet.*

GOODELL

Lessons in Gynecology.

By William Goodell, A.M., M.D., etc., Professor of Clinical Gynecology in the University of Pennsylvania.

This exceedingly valuable work, from one of the most eminent specialists and teachers in gynecology in the United States, is now offered to the profession in a much more complete condition than either of the previous editions. It embraces all the more important diseases and the principal operations in the field of gynecology, and brings to bear upon them all the extensive practical experience and wide reading of the author. It is an indispensable guide to every practitioner who has to do with the diseases peculiar to women. Third Edition. With 112 illustrations. Thoroughly revised and greatly enlarged. One volume, large octavo, 578 pages.

Price, in United States and Canada, Cloth, $5.00; Full Sheep, $6.00. Discount, 20 per cent., making it, net, Cloth, $4.00; Sheep, $4.80. Postage, 27 cents extra. Great Britain, Cloth, 22s. 6d.; Sheep, 28s., post-paid. France, 30 fr. 80.

It is too good a book to have been allowed to remain out of print, and it has unquestionably been missed. The author has revised the work with special care, adding to each lesson such fresh matter as the progress in the art rendered necessary, and he has enlarged it by the insertion of six new lessons. This edition will, without question, be as eagerly sought for as were its predecessors.—*American Journal of Obstetrics.*

His literary style is peculiarly charming. There is a directness and simplicity about it which is easier to admire than to copy. His chain of plain words and almost blunt expressions, his familiar comparison and homely illustrations, make his writings, like his lectures, unusually entertaining. The substance of his teachings we regard as equally excellent.—*Philadelphia Medical and Surgical Reporter.*

Extended mention of the contents of the book is unnecessary; suffice it to say that every important disease found in the female sex is taken up and discussed in a commonsense kind of a way. We wish every physician in America could read and carry out the suggestions of the chapter on "the sexual relations as causes of uterine disorders—conjugal onanism and kindred sins." The department treating of nervous counterfeits of uterine diseases is a most valuable one.—*Kansas City Medical Index.*

GUERNSEY

Plain Talks on Avoided Subjects.

By Henry N. Guernsey, M.D., formerly Professor of Materia Medica and Institutes in the Hahnemann Medical College of Philadelphia; author of Guernsey's "Obstetrics," including the Disorders Peculiar to Women and Young Children; Lectures on Materia Medica, etc. The following Table of Contents shows the scope of the book:

Contents.—Chapter I. Introductory. II. The Infant. III. Childhood. IV. Adolescence of the Male. V. Adolescence of the Female. VI. Marriage: The Husband. VII. The Wife. VIII. Husband and Wife. IX. To the Unfortunate. X. Origin of the Sex. In one neat 16mo volume, bound in Extra Cloth.

Price, post-paid, in the United States and Canada, $1.00; Great Britain, 6s.; France, 6 fr. 20.

HARE

Epilepsy: Its Pathology and Treatment.

BEING AN ESSAY TO WHICH WAS AWARDED A PRIZE OF FOUR THOUSAND FRANCS BY THE ACADEMIE ROYALE DE MEDECINE DE BELGIQUE, DECEMBER 31, 1889.

By HOBART AMORY HARE, M.D. (Univ. of Penna.), B.Sc., Professor of Materia Medica and Therapeutics in the Jefferson Medical College, Phila.; Physician to St. Agnes' Hospital and to the Children's Dispensary of the Children's Hospital; Laureate of the Royal Academy of Medicine in Belgium, of the Medical Society of London, etc.; Member of the Association of American Physicians.

No. 7 in the Physicians' and Students' Ready-Reference Series. 12mo. 228 pages. Neatly bound in Dark-blue Cloth.

Price, post-paid, in United States and Canada, $1.25, net; in Great Britain, 6s. 6d.; in France, 7 fr. 75.

It is representative of the most advanced views of the profession, and the subject is pruned of the vast amount of superstition and nonsense that generally obtains in connection with epilepsy.—*Medical Age.*

Every physician who would get at the gist of all that is worth knowing on epilepsy, and who would avoid useless research among the mass of literary nonsense which pervades all medical libraries, should get this work."—*The Sanitarian.*

It contains all that is known of the pathology of this strange disorder, a clear discussion of the diagnosis from allied neuroses, and the very latest therapeutic measures for relief. It is remarkable for its clearness, brevity, and beauty of style. It is, so far as the reviewer knows, altogether the best essay ever written upon this important subject.—*Kansas City Medical Index.*

The task of preparing the work must have been most laborious, but we think that Dr. Hare will be repaid for his efforts by a wide appreciation of the work by the profession; for the book will be instructive to those who have not kept abreast with the recent literature upon this subject. Indeed, the work is a sort of Dictionary of epilepsy—a reference guide-book upon the subject.—*Alienist and Neurologist.*

HARE

Fever: Its Pathology and Treatment.

BEING THE BOYLSTON PRIZE ESSAY OF HARVARD UNIVERSITY FOR 1890. CONTAINING DIRECTIONS AND THE LATEST INFORMATION CONCERNING THE USE OF THE SO-CALLED ANTIPYRETICS IN FEVER AND PAIN.

By HOBART AMORY HARE, M.D. (Univ. of Penna.), B.Sc., Professor of Materia Medica and Therapeutics in the Jefferson Medical College, Phila.; Physician to St. Agnes' Hospital and to the Children's Dispensary of the Children's Hospital; Laureate of the Royal Academy of Medicine in Belgium, of the Medical Society of London, etc.; Member of the Association of American Physicians.

No. 10 in the Physicians' and Students' Ready-Reference Series. 12mo. Neatly bound in Dark-blue Cloth.

Illustrated with more than 25 new plates of tracings of various fever cases, showing beautifully and accurately the action of the Antipyretics. The work also contains 35 carefully prepared statistical tables of 249 cases showing the untoward effects of the antipyretics.

Price, post-paid, in the United States and Canada, $1.25, net; in Great Britain, 6s. 6d.; in France, 7 fr. 75.

As is usual with this author, the subject is thoroughly handled, and much experimental and clinical evidence, both from the author's experience and that of others, is adduced in support of the view taken.—*New York Medical Abstract.*

The author has done an able piece of work in showing the facts as far as they are known concerning the action of antipyrin, antifebrin, phenacetin, thallin, and salicylic acid. The reader will certainly find the work one of the most interesting of its excellent group, the *Physicians' and Students' Ready-Reference Series.*—*The Dosimetric Medical Review.*

Such books as the present one are of service to the student, the scientific therapeutist, and the general practitioner alike, for much can be found of real value in Dr. Hare's book, with the additional advantage that it is up to the latest researches upon the subject.—*University Medical Magazine.*

JAMES

American Resorts. With Notes upon their Climate.

By Bushrod W. James, A.M., M.D., Member of the American Public Health Association, and the Academy of Natural Sciences, Philadelphia; the Society of Alaskan Natural History and Ethnology, Sitka, Alaska, etc. With a translation from the German, by Mr. S. Kauffmann, of those chapters of "Die Klimate der Erde" written by Dr. A. Woeikof, of St Petersburg, Russia, that relate to North and South America and the Islands and Oceans contiguous thereto.

This is a unique and valuable work, and useful to physicians in all parts of the country. We mention a few of the merits it possesses: *First.* List of all the Health Resorts of the country, arranged according to their climate. *Second.* Contains just the information needed by tourists, invalids, and those who visit summer or winter resorts. *Third.* The latest and best large railroad map for reference. *Fourth.* It indicates the climate each one should select for health. *Fifth.* The author has traveled extensively, and most of his suggestions are practical in reference to localties. In one Octavo volume. Handsomely bound in Cloth. Nearly 300 pages.

Price, post-paid, in the United States and Canada, $2.00, net; Great Britain, 11s. 6d.; France, 12 fr. 40.

Taken altogether, this is by far the most complete exposition of the subject of resorts that has yet been put forth, and it is one that every physician must needs possess intelligent information upon.—*Buffalo Med. & Surg. Jour.*

The special chapter on the therapeutics of climate . . is excellent for its precautionary suggestions in the selection of climates and local conditions, with reference to known pathological indications and constitutional predispositions.—*The Sanitarian.*

The book before us is a very comprehensive volume, giving all necessary information concerning climate, temperature, humidity, sunshine, and indeed everything necessary to be stated for the benefit of the physician or invalid seeking a health resort in the United States.—*Southern Clinic.*

Journal of Laryngology and Rhinology.

Issued on the First of Each Month.

Edited by Dr. Norris Wolfenden, of London, and Dr. John Macintyre, of Glasgow, with the active aid and co-operation of Drs. Dundas Grant, Barclay J. Baron, Hunter Mackenzie, and Sir Morell Mackenzie. Besides those specialists in Europe and America who have so ably assisted in the collaboration of the Journal, a number of new correspondents have undertaken to assist the editors in keeping the Journal up to date, and furnishing it with matters of interest. Amongst these are: Drs. Sajous, of Philadelphia; Middlemass Hunt, of Liverpool; Mellow, of Rio Janeiro; Sedziak, of Warsaw; Draispul, of St. Petersburg, etc. Drs. Michael, Joal, Holger, Mygind, Prof. Massei, and Dr. Valerius Idelson will still collaborate the literature of their respective countries.

Price, 13s. or $3.00 per annum (inclusive of Postage). For single copies, however, a charge of 1s. 3d. (30 cents) will be made. Sample Copy, 25 Cents.

KEATING

Record-Book of Medical Examinations

For Life Insurance.

Designed by John M. Keating, M.D.

This record-book is small, neat, and complete, and embraces all the principal points that are required by the different companies. It is made in two sizes, viz.: No. 1, covering one hundred (100) examinations, and No. 2, covering two hundred (200) examinations. The size of the book is 7 x 3¾ inches, and can be conveniently carried in the pocket.

		U. S. and Canada.	Great Britain.	France.
No. 1.	For 100 Examinations, in Cloth, - -	$ .50 Net	3s. 6d.	3 fr. 60
No. 2.	For 200 Examinations, in Full Leather, with Side Flap, - - - - -	1.00 "	6s.	6 fr. 20

KEATING and EDWARDS

Diseases of the Heart and Circulation.

IN INFANCY AND ADOLESCENCE. WITH AN APPENDIX ENTITLED "CLINICAL STUDIES ON THE PULSE IN CHILDHOOD."

By JOHN M. KEATING, M.D., Obstetrician to the Philadelphia Hospital, and Lecturer on Diseases of Women and Children; Surgeon to the Maternity Hospital; Physician to St. Joseph's Hospital; Fellow of the College of Physicians of Philadelphia, etc.; and WILLIAM A. EDWARDS, M.D., Instructor in Clinical Medicine and Physician to the Medical Dispensary in the University of Pennsylvania; Physician to St. Joseph's Hospital; Fellow of the College of Physicians; formerly Assistant Pathologist to the Philadelphia Hospital, etc.

Illustrated by Photographs and Wood-Engravings. About 225 pages. Octavo. Bound in Cloth.

Price, post-paid, in the United States and Canada, $1.50, net; in Great Britain, 8s. 6d.; in France, 9 fr. 35.

Drs. Keating and Edwards have produced a work that will give material aid to every doctor in his practice among children. The style of the book is graphic and pleasing, the diagnostic points are explicit and exact, and the therapeutical resources include the novelties of medicine as well as the old and tried agents.—*Pittsburgh Med. Review.*

It is not a mere compilation, but a systematic treatise, and bears evidence of considerable labor and observation on the part of the authors. Two fine photographs of dissections exhibit mitral stenosis and mitral regurgitation; there are also a number of wood-cuts.—*Cleveland Medical Gazette.*

LIEBIG and ROHÉ

Practical Electricity in Medicine and Surgery.

By G. A. LIEBIG, JR., PH D., Assistant in Electricity, Johns Hopkins University; Lecturer on Medical Electricity, College of Physicians and Surgeons, Baltimore; Member of the American Institute of Electrical Engineers, etc.; and GEORGE H. ROHE, M.D., Professor of Obstetrics and Hygiene, College of Physicians and Surgeons, Baltimore; Visiting Physician to Bay View and City Hospitals; Director of the Maryland Maternité; Associate Editor "Annual of the Universal Medical Sciences," etc.

Profusely Illustrated by Wood-Engravings and Original Diagrams, and published in one handsome Royal Octavo volume of 383 pages, bound in Extra Cloth.

The constantly increasing demand for this work attests its thorough reliability and its popularity with the profession, and points to the fact that it is already THE standard work on this very important subject. The part on Physical Electricity, written by Dr. Liebig, one of the recognized authorities on the science in the United States, treats fully such topics of interest as Storage Batteries, Dynamos, the Electric Light, and the Principles and Practice of Electrical Measurement in their Relations to Medical Practice. Professor Rohé, who writes on Electro-Therapeutics, discusses at length the recent developments of Electricity in the treatment of stricture, enlarged prostate, uterine fibroids, pelvic cellulitis, and other diseases of the male and female genito-urinary organs. The applications of Electricity in dermatology, as well as in the diseases of the nervous system, are also fully considered.

Price, post-paid, in the United States and Canada, $2.00, net; in Great Britain, 11s. 6d.; France, 12 fr. 40.

Any physician, especially if he be a beginner in electro-therapeutics, will be well repaid by a careful study of this work by Liebig and Rohé. For a work on a special subject the price is low, and no one can give a good excuse for remaining in ignorance of so important a subject as electricity in medicine.—*Toledo Medical and Surgical Reporter.*

The entire work is thoroughly scientific and practical, and is really what the authors have aimed to produce, "a trustworthy guide to the application of electricity in the practice of medicine and Surgery."—*New York Medical Times.*

In its perusal, with each succeeding page, we have been more and more impressed with the fact that here, at last, we have a treatise on electricity in medicine and surgery which amply fulfills its purpose, and which is sure of general adoption by reason of its thorough excellence and superiority to other works intended to cover the same field.—*Pharmaceutical Era.*

After carefully looking over this work, we incline to the belief that the intelligent physician who is familiar with the general subject will be greatly interested and profited.—*American Lancet.*

MASSEY

Electricity in the Diseases of Women.

WITH SPECIAL REFERENCE TO THE APPLICATION OF STRONG CURRENTS.

By G. BETTON MASSEY, M.D., Physician to the Gynæcological Department of the Howard Hospital; late Electro-therapeutist to the Philadelphia Orthopædic Hospital and Infirmary for Nervous Diseases; Member of the American Neurological Association, of the Philadelphia Neurological Society, of the Franklin Institute, etc. SECOND EDITION. Revised and Enlarged. With New and Original Wood-Engravings. Handsomely bound in Dark-Blue Cloth. 240 pages. 12mo. *No. 5 in the Physicians' and Students' Ready-Reference Series.*

This work is presented to the profession as the most complete treatise yet issued on the electrical treatment of the diseases of women, and is destined to fill the increasing demand for clear and practical instruction in the handling and use of strong currents after the recent methods first advocated by Apostoli. The whole subject is treated from the present stand-point of electric science *with new and original illustrations*, the thorough studies of the author and his wide clinical experience rendering him an authority upon electricity itself and its therapeutic applications. The author has enhanced the practical value of the work by including *the exact details* of treatment and results in a number of cases taken from his private and hospital practice.

Price, post-paid, in the United States and Canada, $1.50, net; in Great Britain, 8s. 6d.; in France, 9 fr. 35.

A new edition of this practical manual attests the utility of its existence and the recognition of its merit. The directions are simple, easy to follow and to put into practice; the ground is well covered, and nothing is assumed, the entire book being the record of experience. —*Journal of Nervous and Mental Diseases.*

It is only a few months since we noticed the first edition of this little book; and it is only necessary to add now that we consider it the best treatise on this subject we have seen, and that the improvements introduced into this edition make it more valuable still.—*Boston Medical and Surgical Journ.*

The style is clear, but condensed. Useless detaile are omitted, the reports of cases being pruned of all irrelevant material. The book is an exceedingly valuable one, and represents an amount of study and experience which is only appreciated after a careful reading.—*Medical Record.*

MANTON

Childbed; Its Management; Diseases and Their Treatment.

By WALTER P. MANTON, M.D., Visiting Physician to the Detroit Woman's Hospital; Consulting Gynæcologist to the Eastern Michigan Asylum; President of the Detroit Gynæcological Society; Fellow of the American Society of Obstetricians and Gynæcologists, and of the British Gynæcological Society; Member of Michigan State Medical Society, etc. In one neat 12mo volume, *No. in the Physicians' and Students' Ready-Reference Series.* IN PREPARATION.

Medical Bulletin.

A MONTHLY JOURNAL OF MEDICINE AND SURGERY.

Edited by JOHN V. SHOEMAKER, A.M., M.D. Bright, original, and readable. Articles by the best practical writers procurable. Every article as brief as is consistent with the preservation of its scientific value. Therapeutic Notes by the leaders of the medical profession throughout the world. These, and many other unique features, help to keep THE MEDICAL BULLETIN in its present position as the leading low-price Medical Monthly of the world. Subscribe now.

TERMS: $1.00 a year in advance in United States, Canada, and Mexico.
Foreign Subscription Terms: England, 5s.; France, 6 fr.; Germany, 6 marks; Japan, 1 yen; Australia, 5s.; Holland, 3 florins.

The Medical Bulletin Visiting-List or Physicians' Call Record.

ARRANGED UPON AN ORIGINAL AND CONVENIENT MONTHLY AND WEEKLY PLAN FOR THE DAILY RECORDING OF PROFESSIONAL VISITS.

Frequent Rewriting of Names Unnecessary.

THIS Visiting-List is arranged so that the names of patients need be written but ONCE a month instead of FOUR times a month, as in the old-style lists. By means of a new feature, a simple device consisting of STUB OR HALF LEAVES IN THE FORM OF INSERTS, the first week's visits are recorded in the usual way, and the second week's visits are begun by simply turning over the half-leaf without the necessity of rewriting the patients' names. This very easily understood process is repeated until the month is ended and the record has been kept complete in every detail of VISIT, CHARGE, CREDIT, etc., and the labor and time of entering and transferring names at least THREE times in the month has been saved. There are no intricate rulings; not the least amount of time can be lost in comprehending the plan, for it is acquired at a glance.

THE THREE DIFFERENT STYLES MADE.

The **No. 1 Style** of this List provides space for the DAILY record of seventy different names each month for a year; for physicians who prefer a List that will accommodate a larger practice we have made a **No. 2 Style**, which provides space for the daily record of 105 different names each month for a year, and for physicians who may prefer a Pocket Record-Book of less thickness than either of these styles we have made a **No. 3 Style**, in which "The Blanks for the Recording of Visits in" have been made into removable sections. These sections are very thin, and are made up so as to answer in full the demand of the largest practice, each section providing ample space for the DAILY RECORD OF 210 DIFFERENT NAMES for two months; or 105 different names daily each month for four months; or seventy different names daily each month for six months. Six sets of these sections go with each copy of No. 3 STYLE.

SPECIAL FEATURES NOT FOUND IN ANY OTHER LIST.

In this No. 3 STYLE the PRINTED MATTER, and such matter as the BLANK FORMS FOR ADDRESSES OF PATIENTS, Obstetric Record, Vaccination Record, Cash Account, Birth and Death Records, etc., are fastened permanently in the back of the book, thus reducing its thickness. The addition of one of these removable sections does not increase the thickness more than an eighth of an inch. This brings the book into such a small compass that no one can object to it on account of its thickness, as its bulk is VERY MUCH LESS than that of any visiting-list ever published. Every physician will at once understand that as soon as a section is full it can be taken out, filed away, and another inserted without the least inconvenience or trouble. *Extra or additional sections will be furnished at any time for 15 cents each or $1.75 per dozen.* This Visiting-List contains calendars, valuable miscellaneous data, important tables, and other useful printed matter usually placed in Physicians' Visiting-Lists.

Physicians of many years' standing and with large practices pronounce it THE BEST LIST THEY HAVE EVER SEEN. It is handsomely bound in fine, strong leather, with flap, including a pocket for loose memoranda, etc., and is furnished with a Dixon lead-pencil of excellent quality and finish. It is compact and convenient for carrying in the pocket. Size, 4 x 6⅞ inches.

IN THREE STYLES.

		NET PRICES.
No. 1.	Regular size, to accommodate 70 patients daily each month for one year,	**$1.25**
No. 2.	Large size, to accommodate 105 patients daily each month for one year,	**$1.50**
No. 3.	In which the "Blanks for Recording Visits in" are in removable sections,	**$1.75**
	Special Edition for Great Britain, without printed matter,	**4s. 6d.**

N. B.—The Recording of Visits in this List may be Commenced at any time during the Year.

MICHENER

Hand-Book of Eclampsia; OR, NOTES AND CASES OF PUERPERAL CONVULSIONS.

By E. MICHENER, M.D.; J. H. STUBBS, M.D.; R. B. EWING, M.D.; B. THOMPSON, M.D.; S. STEBBINS, M.D. 16mo. Cloth.

Price, 60 cents, net; in Great Britain, 4s. 6d.; France, 4 fr. 20.

NISSEN

A MANUAL OF INSTRUCTION FOR GIVING

Swedish Movement and Massage Treatment

By PROF. HARTVIG NISSEN, late Director of the Swedish Health Institute, Washington, D. C.; late Instructor in Physical Culture and Gymnastics at the Johns Hopkins University, Baltimore, Md.; Instructor of Swedish and German Gymnastics at Harvard University's Summer School, 1891.

This excellent little volume treats this very important subject in a practical manner. Full instructions are given regarding the mode of applying the Swedish Movement and Massage Treatment in various diseases and conditions of the human system with the greatest degree of effectiveness. Professor Nissen is the best authority in the United States upon the practical phase of this subject, and his book is indispensable to every physician who wishes to *know how* to use these valuable handmaids of medicine.

Illustrated with 29 Original Wood-Engravings. In one 12mo volume of 128 Pages. Neatly bound in Cloth.

Price, post-paid, in the United States and Canada, $1.00, net; Great Britain, 6s.; France, 6 fr. 20.

This manual is valuable to the practitioner, as it contains a terse description of a subject but too little understood in this country. . . . The book is got up very creditably.—*N. Y. Med. Jour.*

The present volume is a modest account of the application of the Swedish Movement and Massage Treatment, in which the technique of the various procedures are clearly stated as well as illustrated in a very excellent manner.—*North American Practitioner.*

This attractive little book presents the subject in a very practical shape, and makes it possible for every physician to understand at least how it is applied, if it does not give him dexterity in the art of its application.—*Chicago Med. Times.*

Physicians' Interpreter.

IN FOUR LANGUAGES (ENGLISH, FRENCH, GERMAN, AND ITALIAN). SPECIALLY ARRANGED FOR DIAGNOSIS BY M. VON V.

The object of this little work is to meet a need often keenly felt by the busy physician, namely, the need of some quick and reliable method of communicating intelligibly with patients of those nationalities and languages unfamiliar to the practitioner. The plan of the book is a systematic arrangement of questions upon the various branches of Practical Medicine, and each question is so worded that the only answer required of the patient is merely Yes or No. The questions are all numbered, and a complete Index renders them always available for quick reference. The book is written by one who is well versed in English, French, German, and Italian, being an excellent teacher in all those languages, and who has also had considerable hospital experience. Bound in Full Russia Leather, for carrying in the pocket. Size, 5x2¾ inches. 206 pages.

Price, post-paid, in United States and Canada, $1.00, net; Great Britain, 6s.; France, 6 fr. 20.

Many other books of the same sort, with more extensive vocabularies, have been published, but, from their size, and from their being usually devoted to equivalants in English and one other language only, they have not had the advantage which is pre-eminent in this—convenience. It is handsomely printed, and bound in flexible red leather in the form of a diary. It would scarcely make itself felt in one's hip-pocket, and would insure its bearer against any ordinary conversational difficulty in dealing with foreign-speaking people, who are constantly coming into our city hospitals.—*New York Medical Journal.*

This little volume is one of the most ingenious aids to the physician which we have seen. We heartily commend the book to any one who, being without a knowledge of the foreign languages, is obliged to treat those who do not know our own language.—*St. Louis Courier of Medicine.*

Physician's All-Requisite Time- and Labor-Saving Account-Book.

BEING A LEDGER AND ACCOUNT-BOOK FOR PHYSICIANS' USE, MEETING ALL THE REQUIREMENTS OF THE LAW AND COURTS.

Designed by WILLIAM A. SEIBERT, M.D , of Easton, Pa.

Probably no class of people lose more money through carelessly kept accounts and overlooked or neglected bills than physicians. Often detained at the bedside of the sick until late at night, or deprived of even a modicum of rest, it is with great difficulty that he spares the time or puts himself in condition to give the same care to his own financial interests that a merchant, a lawyer, or even a farmer devotes. It is then plainly apparent that a system of bookkeeping and accounts that, without sacrificing accuracy, but, on the other hand, ensuring it, at the same time relieves the keeping of a physician's book of half their complexity and two-thirds the labor, is a convenience which will be eagerly welcomed by thousands of overworked physicians. Such a system has at last been devised, and we take pleasure in offering it to the profession in the form of The Physician's All-Requisite Time- and Labor- Saving Account-Book.

There is no exaggeration in stating that this Account-Book and Ledger reduces the labor of keeping your accounts more than one-half, and at the same time secures the greatest degree of accuracy. We may mention a few of the superior advantages of The Physician's All-Requisite Time- and Labor- Saving Account-Book, as follows :—

First—Will meet all the requirements of the law and courts.
Second—Self-explanatory; no cipher code.
Third—Its completeness without sacrificing anything.
Fourth—No posting; one entry only.
Fifth—Universal; can be commenced at any time of the year, and can be continued indefinitely until every account is filled.
Sixth—Absolutely no waste of space.
Seventh—One person must needs be sick every day of the year to fill his account, or might be ten years about it and require no more than the space for one account in this ledger.
Eighth—Double the number and many times more than the number of accounts in any similar book; the 300-page book contains space for 900 accounts, and the 600-page book contains space for 1800 accounts.
Ninth—There are no smaller spaces.
Tenth—Compact without sacrificing completeness; every account complete on same page—a decided advantage and recommendation.
Eleventh—Uniform size of leaves.
Twelfth—The statement of the most complicated account is at once before you at any time of month or year—in other words, the account itself as it stands is its simplest statement.
Thirteenth—No transferring of accounts, balances, etc.

To all physicians desiring a quick, accurate, and comprehensive method of keeping their accounts, we can safely say that no book as suitable as this one has ever been devised. A descriptive circular showing the plan of the book will be sent on application.

NET PRICES, SHIPPING EXPENSES PREPAID.

	In U. S.	Canada (duty paid).	Great Britain.	France.
No. 1. 300 Pages, for 900 Accounts per Year, Size 10x12, Bound in ¾-Russia, Raised Back-Bands, Cloth Sides, ...	$5.00	$5.50	28s.	30 fr. 30
No. 2. 600 Pages, for 1800 Accounts per Year, Size 10x12, Bound in ¾-Russia, Raised Back-Bands, Cloth Sides, . . .	8.00	8.80	42s.	49 fr. 40

PRICE and EAGLETON

Three Charts of the Nervo-Vascular System.

PART I.—THE NERVES. PART II.—THE ARTERIES.
PART III.—THE VEINS.

A New Edition, Revised and Perfected. Arranged by W. HENRY PRICE, M.D., and S. POTTS EAGLETON, M.D. Endorsed by leading anatomists. Clearly and beautifully printed upon extra durable paper.

PART I. The Nerves.—Gives in a clear form not only the Cranial and Spinal Nerves, showing the formation of the different Plexuses and their branches, but also the complete distribution of the SYMPATHETIC NERVES.

PART II. The Arteries.—Gives a unique grouping of the Arterial system, showing the divisions and subdivisions of all the vessels, beginning from the heart and tracing their CONTINUOUS distribution to the periphery, and showing at a glance the terminal branches of each artery.

PART III. The Veins.—Shows how the blood from the periphery of the body is gradually collected by the larger veins, and these coalescing forming still larger vessels, until they finally trace themselves into the Right Auricle of the heart.

It is therefore readily seen that "The Nervo-Vascular System of Charts" offers the following superior advantages :—

1. It is the only arrangement which combines the Three Systems, and yet each is perfect and distinct in itself.

2. It is the only instance of the Cranial, Spinal, and Sympathetic Nervous Systems being represented on one chart.

3. From its neat size and clear type, and being printed only upon one side, it may be tacked up in any convenient place, and is always ready for freshening up the memory and reviewing for examination.

Price, post-paid, in United States and Canada, 50 cents, net, complete; in Great Britain, 3s. 6d.; in France, 3 fr. 60.

For the student of anatomy there can possibly be no more concise way of acquiring a knowledge of the nerves, veins, and arteries of the human system. It presents at a glance their trunks and branches in the great divisions of the body. It will save a world of tedious reading, and will impress itself on the mind as no ordinary *vade mecum*, even, could. Its price is nominal and its value inestimable. No student should be without it.—*Pacific Record of Medicine and Surgery.*

These are three admirably arranged charts for the use of students, to assist in memorizing their anatomical sudies.—*Buffalo Med. and Surg. Jour.*

PURDY

Diabetes: Its Cause, Symptoms and Treatment

By CHAS. W. PURDY, M.D. (Queen's University), Honorary Fellow of the Royal College of Physicians and Surgeons of Kingston; Member of the College of Physicians and Surgeons of Ontario; Author of "Bright's Disease and Allied Affections of the Kidneys;" Member of the Association of American Physicians; Member of the American Medical Association; Member of the Chicago Academy of Sciences, etc.

CONTENTS.—Section I. Historical, Geographical, and Climatological Considerations of Diabetes Mellitus. II. Physiological and Pathological Considerations of Diabetes Mellitus. III. Etiology of Diabetes Mellitus. IV. Morbid Anatomy of Diabetes Mellitus. V. Symptomatology of Diabetes Mellitus. VI. Treatment of Diabetes Mellitus. VII. Clinical Illustrations of Diabetes Mellitus. VIII. Diabetes Insipidus; Bibliography.

12mo. Dark Blue Extra Cloth. Nearly 200 pages. With Clinical Illustrations. *No. 8 in the Physicians' and Students' Ready-Reference Series.*

Price, post-paid, in the United States and Canada, $1.25, net; in Great Britain, 6s. 6d.; in France, 7 fr. 75.

This will prove a most entertaining as well as most interesting treatise upon a disease which frequently falls to the lot of every practitioner. The work has been written with a special view of bringing out the features of the disease as it occurs in the United States. The author has very judiciously arranged the little volume, and it will offer many pleasant attractions to the practitioner.—*Nashville Journal of Medicine and Surgery.*

While many monographs have been published which have dealt with the subject of diabetes, we know of none which so thoroughly considers its relations to the geographical conditions which exist in the United States, nor which is more complete in its summary of the symptomatology and treatment of this affection. A number of tables, showing the percentage of sugar in a very large number of alcoholic beverages, adds very considerably to the value of the work.—*Medical News.*

REMONDINO

Circumcision: Its History, Modes of Operation, Etc.

FROM THE EARLIEST TIMES TO THE PRESENT; WITH A HISTORY OF EUNUCHISM, HERMAPHRODISM, ETC., AS OBSERVED AMONG ALL RACES AND NATIONS; ALSO A DESCRIPTION OF THE DIFFERENT OPERATIVE METHODS OF MODERN SURGERY PRACTICED UPON THE PREPUCE.

By P. C. REMONDINO, M.D. (Jefferson); Member of the American Medical Association; Member of the American Public Health Association; Vice-President of the State Medical Society of California, and of the Southern California Medical Society, etc., etc.

No. 11 in the Physicians' and Students' Ready-Reference Series. About 350 pages. 12mo. Handsomely bound in Dark-Blue Cloth. JUST READY.

Price, post-paid, in the United States and Canada, $1.25, net; in Great Britain, 8s. 6d.; in France, 7 fr. 75. Cheap Edition (paper binding), United States and Canada, 50 cents, net, post-paid; Great Britain, 4s. 3d.; France, 4 fr. 20.

ROHÉ

Text-Book of Hygiene.

A COMPREHENSIVE TREATISE ON THE PRINCIPLES AND PRACTICE OF PREVENTIVE MEDICINE FROM AN AMERICAN STAND-POINT.

By GEORGE H. ROHÉ, M.D., Professor of Obstetrics and Hygiene in the College of Physicians and Surgeons, Baltimore; Member of the American Public Health Association, etc.

Every Sanitarian should have Rohé's "Text-Book of Hygiene" as a work of reference. Of this New (second) edition, one of the best qualified judges, namely, Albert L. Gihon, M.D., Medical Director, U. S. Navy, in charge of U. S Naval Hospital, Brooklyn, N. Y., and ex-President of the American Public Health Association, writes: "It is the most admirable, concise *résumé* of the facts of Hygiene with which I am acquainted. Prof. Rohé's attractive style makes the book so readable that no better presentation of the important place of Preventive Medicine, among their studies, can be desired for the younger members, especially, of our profession.

Second Edition, thoroughly revised and largely rewritten, with many illustrations and valuable tables. In one handsome Royal Octavo volume of over 400 pages, bound in Extra Cloth.

Price, post-paid, in United States, $2.50, net; Canada (duty paid), $2.75, net; Great Britain, 14s.; France, 16 fr. 20.

In short, the work contains brief and practical articles on hygienic regulation of life, under almost all conditions. One prominent feature is that there are no superfluous words; every sentence is direct to the point sought. It is, therefore, easy reading, and conveys very much information in little space.—*The Pacific Record of Medicine and Surgery.*

Truly a most excellent and valuable work, comprising the accepted facts in regard to preventive medicine, clearly stated and well arranged. It is unquestionably a work that should be in the hands of every physician in the country, and medical students will find it a most excellent and valuable text-book.—*The Southern Practitioner.*

The first edition was rapidly exhausted, and the book justly became an authority to physicians and sanitary officers, and a text-book very generally adopted in the colleges throughout America. The second edition is a great improvement over the first, all of the matter being thoroughly revised, much of it being rewritten, and many additions being made. The size of the book is increased one hundred pages. The book has the original recommendation of being a handsomely-bound, clearly-printed octavo volume, profusely illustrated with reliable references for every branch of the subject matter.—*Medical Record.*

The wonder is how Prof. Rohé has made the book so readable and entertaining with so much matter necessarily condensed. The book is well printed with good, clear type, is attractive in appearance, and contains a number of valuable tables and illustrations that must be of decided aid to the student, if not to the general practitioner and health officer. Altogether, the manual is a good exponent of hygiene and sanitary science from the present American stand-point, and will repay with pleasure and profit any time that may be given to its perusal.—*University Medical Magazine.*

SAJOUS

HAY FEVER

And Its Successful Treatment by Superficial Organic Alteration of the Nasal Mucous Membrane.

By CHARLES E. SAJOUS, M.D., formerly Lecturer on Rhinology and Laryngology in Jefferson Medical College; Vice-President of the American Laryngological Association; Officer of the Academy of France and of Public Instruction of Venezuela; Corresponding Member of the Royal Society of Belgium, of the Medical Society of Warsaw (Poland), and of the Society of Hygiene of France; Member of the American Philosophical Society, etc., etc.

With 13 Engravings on Wood. 103 pages. 12mo. Bound in Cloth. Beveled Edges.

Price, post-paid, in the United States and Canada, $1.00, net; in Great Britain, 6s.; France, 6 fr. 20.

SANNÉ

Diphtheria, Croup: Tracheotomy and Intubation.

FROM THE FRENCH OF A. SANNÉ.

Translated and enlarged by HENRY Z. GILL, M D., LL.D., late Professor of Surgery in Cleveland, Ohio.

SANNÉ's work is quoted, directly or indirectly, by every writer since its publication, as the highest authority, statistically, theoretically, and practically. The translator, having given special study to the subject for many years, has added over fifty pages, including the Surgical Anatomy, Intubation, and the recent progress in other branches, making it, beyond question, the most complete work extant on the subject of Diphtheria in the English language.

Facing the title-page is found a very fine Colored Lithograph Plate of the parts concerned in Tracheotomy. Next follows an illustration of a cast of the entire Trachea, and bronchi to the third or fourth division, in one piece, taken from a photograph of a case in which the cast was expelled during life from a patient sixteen years old. This is the most complete cast of any one recorded.

Over fifty other illustrations of the surgical anatomy of instruments, etc., add to the practical value of the work.

A full Index accompanies the enlarged volume, also a List of Authors, making altogether a very handsome illustrated volume of over 680 pages.

	United States.	Canada (duty paid).	Great Britain.	France.
Price, post-paid, Cloth, -	$4.00, Net	$4.40, Net	22s. 6d.	24 fr. 60
" " Leather,	5.00, "	5.50, "	28s.	30 fr. 30

The subject of intubation, so recently revived in this country, receives a very careful and impartial discussion at the hands of the translator, and a most valuable chapter on the prophylaxis of diphtheria and croup closes the volume. Altogether the book is one that is valuable and timely, and one that should be in the hands of every general practitioner.—*St. Louis Med. and Surgical Journ.*

Diphtheria having become such a prevalent, wide-spread, and fatal disease, no general practitioner can afford to be without this work. It will aid in preventive measures, stimulate promptness in application of, and efficiency in, treatment.—*Southern Practitioner.*

SENN

Principles of Surgery.

By N. SENN, M.D., PH.D., Professor of Practice of Surgery and Clinical Surgery in Rush Medical College, Chicago, Ill.; Professor of Surgery in the Chicago Polyclinic; Attending Surgeon to the Milwaukee Hospital; Consulting Surgeon to the Milwaukee County Hospital and to the Milwaukee County Insane Asylum.

This work, by one of America's greatest surgeons, is thoroughly COMPLETE; its clearness and brevity of statement are among its conspicuous merits. The author's long, able, and conscientious researches in every direction in this important field are a guarantee, of unusual trustworthiness, that every branch of the subject is treated authoritatively and in such a manner as to bring the greatest gain in knowledge to the Practitioner and Student.

In one handsome Royal Octavo volume, with 109 fine Wood-Engravings and 624 pages.

	United States.	Canada (duty paid)	Great Britain.	France.
Price in Cloth,	$4.50, Net	$5.00, Net	24s. 6d.	27 fr. 20
" Sheep or ½-Russia,	5.50 "	6.10 "	30s.	33 fr. 10

OPINIONS AND CRITICISMS.

STEPHEN SMITH, M.D., Professor of Clinical Surgery Medical Department University of the City of New York, writes:—"I have examined the work with great satisfaction, and regard it as a most valuable addition to American Surgical literature. There has long been great need of a work on the principles of surgery which would fully illustrate the present advanced state of knowledge of the various subjects embraced in this volume. The work seems to me to meet this want admirably."

LEWIS A. SAYRE, M.D., Professor Orthopædic Surgery Bellevue Hospital Medical College, New York, writes:—"My Dear Doctor Senn: Your very valuable work on surgery, sent to me some time since, I have studied with great satisfaction and improvement. I congratulate you most heartily on having produced the most classical and practical work on surgery yet published."

FRANK J. LUTZ, M.D., St. Louis, Mo., says:—"It seems incredible that those who pretend to teach have done without such a guide before, and I do not understand how our students succeeded in mastering the principles of modern surgery by attempting to read our obsolete text-books. American surgery should feel proud of the production, and the present generation of surgeons owe you a debt of gratitude."

W. W. DAWSON, M.D., Cincinnati, Ohio, writes:—"It is a work of great merit, and one greatly needed. Reliable Surgery must be founded upon correct principles."

WM. OSLER, M.D., The Johns Hopkins Hospital, Baltimore, says:—"You certainly have covered the ground thoroughly and well, and with a thoroughness I do not know of in any similar work. I should think it would prove a great boon to the students and also to very many teachers."

J. C. WARREN, M.D., Boston, Mass., writes:—"The book comes at an opportune moment; the old text-books on Surgical Pathology are out of date, and you are filling practically a new field."

The work is systematic and compact, without a fact omitted or a sentence too much, and it not only makes instructive but fascinating reading. A conspicuous merit of Senn's work is his method, his persistent and tireless search through original investigations for additions to knowledge, and the practical character of his discoveries. This combination of the discoverer and the practical man gives a special value to all his work, and is one of the secrets of his fame. No physician in any line of practice can afford to be without Senn's "Principles of Surgery."—*The Review of Insanity and Nervous Diseases.*

Every chapter is a mine of information containing all the recent advances on the subjects presented in such a systematic, instructive and entertaining style that the reader will not willingly lay it aside, but will read and re-read with pleasure and profit.—*Kansas Medical Journal.*

It is a most admirable work in all respects, and should be in the hands of every senior student, general practitioner, and special surgeon.—*Canadian Practitioner.*

After perusing this work on several different occasions we have come to the conclusion that it is a remarkable work by a man of unusual ability. We have never seen anything like it before. The author seems to have had a very large personal experience, which is freely made use of in the text, besides which he is familiar with almost all that has been written in English and German on the above topics. We congratulate Dr. Senn upon the manner in which he has accomplished his task.—*The Canada Medical Record.*

The work is exceedingly practical, as the chapters on the treatment of the various conditions considered are based on sound deductions, are complete, and easily carried out by any painstaking surgeon. Asepsis and antisepsis are exhaustively treated. All in all, the book is a most excellent one, and deserves a place in every well-selected library.—*Medical Record.*

It will prove exceedingly valuable in the diffusion of more thorough knowledge of the subject-matter among English-speaking surgeons. As in the case of all his work, he has done this in a truly admirable manner. Nowhere is there room to criticise the accuracy of Senn's statements, and everywhere is there evidence of a thorough study of the best work of the most eminent men. The book throughout is worthy of the highest praise. It should be adopted as a text-book in all of our schools.—*University Medical Magazine.*

The principles of surgery, as expounded by Dr. Senn, are such as to place the student in the independent position of evolving from them methods of treatment; the master of the principles readily becomes equally a master of practice. And this, of course, is really the whole purpose of the volume.—*Weekly Medical Review.*

SHOEMAKER

Heredity, Health, and Personal Beauty.

INCLUDING THE SELECTION OF THE BEST COSMETICS FOR THE SKIN, HAIR, NAILS, AND ALL PARTS RELATING TO THE BODY.

By JOHN V. SHOEMAKER, A.M., M.D., Professor of Materia Medica, Pharmacology, Therapeutics, and Clinical Medicine, and Clinical Professor of Diseases of the Skin in the Medico-Chirurgical College of Philadelphia; Physician to the Medico-Chirurgical Hospital, etc., etc.

The health of the skin and hair, and how to promote them, are discussed; the treatment of the nails; the subjects of ventilation, food, clothing, warmth, bathing; the circulation of the blood, digestion, ventilation; in fact, all that in daily life conduces to the well-being of the body and refinement is duly enlarged upon. To these stores of popular information is added a list of the best medicated soaps and toilet soaps, and a whole chapter of the work is devoted to household remedies. The work is largely suggestive, and gives wise and timely advice as to when a physician should be consulted. *This is just the book to place on the waiting-room table of every physician, and a work that will prove useful in the hands of your patients.*

Complete in one handsome Royal Octavo volume of 425 pages, beautifully and clearly printed, and bound in Extra Cloth, Beveled Edges, with side and back gilt stamps and in Half-Morocco Gilt Top.

Price, in United States, post-paid, Cloth, $2.50; Half-Morocco, $3.50, net. Canada (duty paid), Cloth, $2.75; Half-Morocco, $3.90, net. Great Britain, Cloth, 14s.; Half-Morocco, 19s. 6d. France, Cloth, 15 fr.; Half-Morocco, 22 fr.

The book reads not like the fulfillment of a task, but like the researches and observations of one thoroughly in love with his subject, fully appreciating its importance, and writing for the pleasure he experiences in it. The work is very comprehensive and complete in its scope.—*Medical World.*

The book before us is a most remarkable production and a most entertaining one. The book is equally well adapted for the laity or the profession. It tells us how to be healthy, happy, and as beautiful as possible. We can't review this book; it is different from anything we have ever read. It runs like a novel, and will be perused until finished with pleasure and profit. Buy it, read it, and be surprised, pleased, and improved.—*The Southern Clinic.*

This book is written primarily for the laity, but will prove of interest to the physician as well. Though the author goes to some extent into technicalities, he confines himself to the use of good, plain English, and in that respect sets a notable example to many other writers on similar subjects. Furthermore, the book is written from a thoroughly American standpoint.—*Medical Record.*

This is an exceedingly interesting book, both scientific and practical in character, intended for both professional and lay readers. The book is well written and presented in admirable form by the publisher.—*Canadian Practitioner.*

SHOEMAKER

Ointments and Oleates: Especially in Diseases of the Skin.

By JOHN V. SHOEMAKER, A.M., M.D., Professor of Materia Medica, Pharmacology, Therapeutics, and Clinical Medicine, and Clinical Professor of Diseases of the Skin in the Medico-Chirurgical College of Philadelphia, etc., etc.

The author concisely concludes his preface as follows: "The reader may thus obtain a conspectus of the whole subject of inunction as it exists to-day in the civilized world. In all cases the mode of preparation is given, and the therapeutical application described *seriatim*, in so far as may be done without needless repetition."

SECOND EDITION, revised and enlarged. 298 pages. 12mo. Neatly bound in Dark-Blue Cloth. *No. 6 in the Physicians' and Students' Ready-Reference Series.*

Price, post-paid, in the United States and Canada, $1.50, net; in Great Britain, 8s. 6d.; in France, 9 fr. 35.

It is invaluable as a ready reference when ointments or oleates are to be used, and is serviceable to both druggist and physician.—*Canada Medical Record.*

To the physician who feels uncertain as to the best form in which to prescribe medicines by way of the skin the book will prove valuable, owing to the many prescriptions and formulæ which dot its pages, while the copious index at the back materially aids in making the book a useful one.—*Medical News.*

SHOEMAKER

Materia Medica and Therapeutics.

WITH ESPECIAL REFERENCE TO THE CLINICAL APPLICATION OF DRUGS. BEING THE SECOND AND LAST VOLUME OF A TREATISE ON MATERIA MEDICA, PHARMACOLOGY, AND THERAPEUTICS, AND AN INDEPENDENT VOLUME UPON DRUGS.

By JOHN V. SHOEMAKER, A.M., M.D., Professor of Materia Medica, Pharmacology, Therapeutics, and Clinical Medicine, and Clinical Professor of Diseases of the Skin in the Medico-Chirurgical College of Philadelphia; Physician to the Medico-Chirurgical Hospital, etc., etc.

This, the second volume of Shoemaker's "Materia Medica, Pharmacology, and Therapeutics," is wholly taken up with the consideration of drugs, each remedy being studied from three points of view, viz.: the Preparations, or Materia Medica; the Physiology and Toxicology, or Pharmacology; and, lastly, its Therapy. It is thoroughly abreast of the progress of Therapeutic Science, and is really an indispensable book to every student and practitioner of medicine.

Royal Octavo, about 675 pages. Thoroughly and carefully indexed.

Price, in United States, post-paid, Cloth, $3.50; Sheep, $4.50, net. Canada (duty paid), Cloth, $4.00; Sheep, $5.00, net. Great Britain, Cloth, 20s.; Sheep, 26s. France, Cloth, 22 fr. 40; Sheep, 28 fr. 60.

The first volume of this work is devoted to Pharmacy, General Pharmacology, and Therapeutics, and remedial agents not properly classed with drugs. Royal Octavo, 353 pages.

Price of Volume I, post-paid, in United States, Cloth, $2.50, net; Sheep, $3.25, net. Canada, duty paid, Cloth, $2.75, net; Sheep, $3.60, net. Great Britain, Cloth, 14s.; Sheep, 18s. France, Cloth, 16 fr. 20; Sheep, 20 fr. 20. The volumes are sold separately.

SHOEMAKER'S TREATISE ON MATERIA MEDICA, PHARMACOLOGY, AND THERAPEUTICS STANDS ALONE.

(1) Among Materia Medica text-books, in that it includes every officinal drug and every preparation contained in the United States Pharmacopœia.

(2) In that it is the only work on therapeutics giving the strength, composition, and dosage of every officinal preparation.

(3) In giving the latest investigations with regard to the physiological action of drugs and the most recent applications in therapeutics.

(4) In combining with officinal drugs the most reliable reports of the actions and uses of all the noteworthy new remedies, such as acetanilid, antipyrin, bromoform, exalgin, pyoktanin, pyridin, somnal, spermine (Brown-Séquard), tuberculin (Koch's lymph), sulphonal, thiol, urethan, etc., etc.

(5) As a complete encyclopædia of modern therapeutics in condensed form, arranged alphabetically for convenience of reference for either physician, dentist, or pharmacist, when immediate information is wanted concerning the action, composition, dose, or antidotes for any officinal preparation or new remedy.

(6) In giving the physical characters and chemical formulæ of the new remedies, especially the recently-introduced antipyretics and analgesics.

(7) In the fact that it gives special attention to the consideration of the diagnosis and treatment of poisoning by the more active drugs, both officinal and non-officinal.

(8) And unrivaled in the number and variety of the prescriptions and practical formulæ, representing the latest achievements of clinical medicine.

(9) In that, while summarizing foreign therapeutical literature, it fully recognizes the work done in this department by American physicians. It is an epitome of the present state of American medical practice, which is universally acknowledged to be the best practice.

(10) Because it is the most complete, convenient, and compendious work of reference, being, in fact, a companion to the United States Pharmacopœia, a drug-encyclopædia, and a therapeutic hand-book all in one volume.

The value of the book lies in the fact that it contains all that is authentic and trustworthy about the host of new remedies which have deluged us in the last five years. The pages are remarkably free from useless information. The author has done well in following the alphabetical order.—*N. Y. Med. Record.*

In perusing the pages devoted to the special consideration of drugs, their pharmacology, physiological action, toxic action, and therapy, one is constantly surprised at the amount of material compressed in so limited a space. The book will prove a valuable addition to the physician's library.—*Occidental Med. Times.*

It is a meritorious work, with many unique features. It is richly illustrated by well-tried prescriptions showing the practical application of the various drugs discussed. In short, this work makes a pretty complete encyclopædia of the science of therapeutics, conveniently arranged for handy reference.—*Med. World.*

SMITH

Physiology of the Domestic Animals.

A TEXT-BOOK FOR VETERINARY AND MEDICAL STUDENTS AND PRACTITIONERS.

By ROBERT MEADE SMITH, A.M., M.D, Professor of Comparative Physiology in University of Pennsylvania; Fellow of the College of Physicians and Academy of the Natural Sciences, Philadelphia; of American Physiological Society; of the American Society of Naturalists, etc.

This new and important work, the most thoroughly complete in the English language on this subject, treats of the physiology of the domestic animals in a most comprehensive manner, especial prominence being given to the subject of foods and fodders, and the character of the diet for the herbivora under different conditions, with a full consideration of their digestive peculiarities. Without being overburdened with details, it forms a complete text-book of physiology adapted to the use of students and practitioners of both veterinary and human medicine. This work has already been adopted as the Text-Book on Physiology in the Veterinary Colleges of the United States, Great Britain, and Canada. In one Handsome Royal Octavo Volume of over 950 pages, profusely illustrated with more than 400 Fine Wood-Engravings and many Colored Plates.

	United States.	Canada (duty paid)	Great Britain.	France.
Price, Cloth, - -	$5.00, Net	$5.50, Net	28s.	30 fr. 30
" Sheep, - -	6.00 "	6.60 "	32s.	36 fr. 20

A. LIAUTARD, M.D., H.F.R.C., V.S., Professor of Anatomy, Operative Surgery, and Sanitary Medicine in the American Veterinary College, New York, writes:—"I have examined the work of Dr. R. M. Smith on the 'Physiology of the Domestic Animals,' and consider it one of the best additions to veterinary literature that we have had for some time."

E. M. READING, A.M., M.D., Professor of Physiology in the Chicago Veterinary College, writes:—"I have carefully examined the 'Smith's Physiology,' published by you, and like it. It is comprehensive, exhaustive, and complete, and is especially adapted to those who desire to obtain a full knowledge of the principles of physiology, and are not satisfied with a mere smattering of the cardinal points."

Dr. Smith's presentment of his subject is as brief as the status of the science permits, and to this much-desired conciseness he has added an equally welcome clearness of statement. The illustrations in the work are exceedingly good, and must prove a valuable aid to the full understanding of the text.—*Journal of Comparative Medicine and Surgery.*

Veterinary practitioners and graduates will read it with pleasure. Veterinary students will readily acquire needed knowledge from its pages, and veterinary schools, which would be well equipped for the work they aim to perform, cannot ignore it as their text-book in physiology.—*American Veterinary Review.*

Altogether, Professor Smith's "Physiology of the Domestic Animals" is a happy production, and will be hailed with delight in both the human medical and veterinary medical worlds. It should find its place, besides, in all agricultural libraries.—PAUL PAQUIN, M.D., V.S., in the *Weekly Medical Review.*

The author has judiciously made the nutritive functions the strong point of the work, and has devoted special attention to the subject of foods and digestion. In looking through other sections of the work, it appears to us that a just proportion of space is assigned to each, in view of their relative importance to the practitioner.—*London Lancet.*

SOZINSKEY

Medical Symbolism. Historical Studies in the Arts of Healing and Hygiene.

By THOMAS S. SOZINSKEY, M.D., PH.D., Author of "The Culture of Beauty," "The Care and Culture of Children," etc.

12mo. Nearly 200 pages. Neatly bound in Dark-Blue Cloth. Appropriately illustrated with upward of thirty (30) new Wood-Engravings. *No. 9 in the Physicians' and Students' Ready-Reference Series.*

Price, post-paid, in United States and Canada, $1.00, net; Great Britain, 6s.; France, 6 fr. 20.

He who has not time to more fully study the more extended records of the past, will highly prize this little book. Its interesting discourse upon the past is full of suggestive thought.—*American Lancet.*

Like an oasis in a dry and dusty desert of medical literature, through which we wearily stagger, is this work devoted to medical symbolism and mythology. As the author aptly quotes: "What some light braines may esteem as foolish toyes, deeper judgments can and will value as sound and serious matter."—*Canadian Practitioner.*

In the volume before us we have an admirable and successful attempt to set forth in order those medical symbols which have come down to us, and to explain on historical grounds their significance. An astonishing amount of information is contained within the covers of the book, and every page of the work bears token of the painstaking genius and erudite mind of the now unhappily deceased author.—*London Lancet.*

STEWART

Obstetric Synopsis.

By JOHN S. STEWART, M.D., formerly Demonstrator of Obstetrics and Chief Assistant in the Gynæcological Clinic of the Medico-Chirurgical College of Philadelphia: with an introductory note by WILLIAM S. STEWART, A.M., M.D., Professor of Obstetrics and Gynæcology in the Medico-Chirurgical College of Philadelphia.

By students this work will be found particularly useful. It is based upon the teachings of such well-known authors as Playfair, Parvin, Lusk, Galabin, and Cazeaux and Tarnier, and contains much new and important matter of great value to both student and practitioner.

With 42 Illustrations. 202 pages. 12mo. Handsomely bound in Dark-Blue Cloth. *No. 1 in the Physicians' and Students' Ready-Reference Series.*

Price, post-paid, in the United States and Canada, $1.00, net; in Great Britain, 6s.; France, 6 fr. 20.

DELASKIE MILLER, M.D., Professor of Obstetrics, Rush Medical College, Chicago, Ill., says:—"I have examined the 'Obstetric Synopsis,' by John S. Stewart, M.D., and it gives me pleasure to characterize the work as systematic, concise, perspicuous, and authentic. Among manuals it is one of the best."

It is well written, excellently illustrated, and fully up to date in every respect. Here we find all the essentials of Obstetrics in a nutshell, Anatomy, Embryology, Physiology, Pregnancy, Labor, Puerperal State, and Obstetric Operations all being carefully and accurately described.—*Buffalo Medical and Surgical Journal.*

It is clear and concise. The chapter on the development of the ovum is especially satisfactory. The judicious use of bold-faced type for headings and italics for important statements gives the book a pleasing typographical appearance.—*Medical Record.*

This volume is done with a masterly hand. The scheme is an excellent one. The whole is freely and most admirably illustrated with well-drawn, new engravings, and the book is of a very convenient size.—*St. Louis Medical and Surgical Journal.*

ULTZMANN

The Neuroses of the Genito-Urinary System in the Male.

WITH STERILITY AND IMPOTENCE.

By DR. R. ULTZMANN, Professor of Genito-Urinary Diseases in the University of Vienna. Translated, with the author's permission, by GARDNER W. ALLEN, M.D., Surgeon in the Genito-Urinary Department, Boston Dispensary.

Full and complete, yet terse and concise, it handles the subject with such a vigor of touch, such a clearness of detail and description, and such a directness to the result, that no medical man who once takes it up will be content to lay it down until its perusal is complete,—nor will one reading be enough.

Professor Ultzmann has approached the subject from a somewhat different point of view from most surgeons, and this gives a peculiar value to the work. It is believed, moreover, that there is no convenient hand-book in English treating in a broad manner the Genito-Urinary Neuroses.

SYNOPSIS OF CONTENTS.—First Part—I. Chemical Changes in the Urine in Cases of Neuroses. II. Neuroses of the Urinary and of the Sexual Organs, classified as: (1) Sensory Neuroses; (2) Motor Neuroses; (3) Secretory Neuroses. Second Part—Sterility and Impotence. The treatment in all cases is described clearly and minutely.

Illustrated. 12mo. Handsomely bound in Dark-Blue Cloth. *No. 4 in the Physicians' and Students' Ready-Reference Series.*

Price, post-paid, in the United States and Canada, $1.00, net; in Great Britain, 6s.; in France, 6 fr. 20.

This book is to be highly recommended, owing to its clearness and brevity. Altogether, we do not know of any book of the same size which contains so much useful information in such a short space.—*Medical News.*

Its scope is large, not being confined to the one condition,—neurasthenia,—but embracing all of the neuroses, motor and sensory, of the genito-urinary organs in the male. No one who has read after Dr. Ultzmann need be reminded of his delightful manner of presenting his thoughts, which ever sparkle with originality and appositeness.—*Weekly Med. Review.*

It engenders sound pathological teaching, and will aid in no small degree in throwing light on the management of many of the difficult and more refractory cases of the classes to which these essays especially refer.—*The Medical Age.*

WHEELER

Abstracts of Pharmacology.

By H. A. Wheeler, M.D. (Registered Pharmacist, No. 3468, Iowa). Prepared for the use of Physicians and Pharmacists, and especially for the use of Students of Medicine and Pharmacy, who are preparing for Examination in Colleges and before State Boards of Examiners.

This book does not contain questions and answers, but solid pages of abstract information. It will be an almost indispensable companion to the practicing Pharmacist, and a very useful reference-book to the Physician. It contains a brief but thorough explanation of all terms and processes used in practical pharmacy, an abstract of all that is essential to be known of each officinal drug, its preparations and therapetic action, with doses; in Chemistry and Botany, much that is useful to the Physician and Pharmacist; a general working formula for each class and an abstract formula for each officinal preparation, and many of the more popular unofficinal ones, together with their doses; also many symbolic formulas; a list of abbreviations used in prescription writing; rules governing incompatibilities; a list of Solvents; tests for the more common drugs; the habitat and best time for gathering plants to secure their medical properties.

The book contains 180 pages, 5½ x 8 inches, closely printed and on the best paper, nicely and durably bound, containing a greater amount of information on the above topics than any other work for the money.

Price, post-paid, in United States and Canada, $1.50, net; in Great Britain, 8s. 6d.; in France, 9 fr. 35.

YOUNG

Synopsis of Human Anatomy.

Being a Complete Compend of Anatomy, Including the Anatomy of the Viscera, and Numerous Tables.

By James K. Young, M.D., Instructor in Orthopædic Surgery and Assistant Demonstrator of Surgery, University of Pennsylvania; Attending Orthopædic Surgeon, Out-Patient Department, University Hospital, etc.

While the author has prepared this work especially for students, sufficient descriptive matter has been added to render it extremely valuable to the busy practitioner, particularly the sections on the Viscera, Special Senses, and Surgical Anatomy.

The work includes a complete account of Osteology, Articulations and Ligaments, Muscles, Fascias, Vascular and Nervous Systems, Alimentary, Vocal, and Respiratory and Genito-Urinary Apparatus, the Organs of Special Sense, and Surgical Anatomy.

In addition to a most carefully and accurately prepared text, wherever possible, the value of the work has been enhanced by tables to facilitate and minimize the labor of students in acquiring a thorough knowledge of this important subject. The section on the teeth has also been especially prepared to meet the requirements of students of dentistry.

Illustrated with 76 Wood-Engravings. 390 pages. 12mo. *No. 3 in the Physicians' and Students' Ready-Reference Series.*

Price, post-paid, in United States and Canada $1.40, net; Great Britain, 8s. 6d.; France, 9 fr. 25.

Every unnecessary word has been excluded, out of regard to the very limited time at the medical student's disposal. It is also good as a reference-book, as it presents the facts about which he wishes to refresh his memory in the briefest manner consistent with clearness.—*New York Medical Journal.*

As a companion to the dissecting-table, and a convenient reference for the practitioner, it has a definite field of usefulness.—*Pittsburgh Medical Review.*

The book is much more satisfactory than the "remembrances" in vogue, and yet is not too cumbersome to be carried around and read at odd moments—a property which the student will readily appreciate.—*Weekly Medical Review.*

WITHERSTINE

The International Pocket Medical Formulary

ARRANGED THERAPEUTICALLY.

By C. SUMNER WITHERSTINE, M.S., M.D., Associate Editor of the "Annual of the Universal Medical Sciences;" Visiting Physician of the Home for the Aged, Germantown, Philadelphia; Late House-Surgeon Charity Hospital, New York.

More than 1800 formulæ from several hundred well-known authorities. With an Appendix containing a Posological Table, the newer remedies included; Important Incompatibles; Tables on Dentition and the Pulse; Table of Drops in a Fluidrachm and Doses of Laudanum graduated for age; Formulæ and Doses of Hypodermatic Medication, including the newer remedies; Uses of the Hypodermatic Syringe; Formulæ and Doses for Inhalations, Nasal Douches, Gargles, and Eye-washes; Formulæ for Suppositories; Use of the Thermometer in Disease; Poisons, Antidotes, and Treatment; Directions for Post-Mortem and Medico-Legal Examinations; Treatment of Asphyxia, Sun-stroke, etc.; Antiemetic Remedies and Disinfectants; Obstetrical Table; Directions for Ligations of Arteries; Urinary Analysis; Table of Eruptive Fevers; Motor Points for Electrical Treatment, etc.

This work, the best and most complete of its kind, contains about 275 printed pages, besides extra blank leaves—the book being interleaved throughout—elegantly printed, with red lines, edges, and borders; with illustrations. Bound in leather, with side flap.

It is a handy book of reference, replete with the choicest formulæ (over 1800 in number) of more than six hundred of the most prominent classical writers and modern practitioners.

The remedies given are not only those whose efficiency has stood the test of time, but also the newest and latest discoveries in pharmacy and medical science, as prescribed and used by the best-known American and foreign modern authorities.

It contains the latest, largest (66 formulæ), and most complete collection of hypodermatic formulæ (including the latest new remedies) ever published, with doses and directions for their use in over fifty different diseases and diseased conditions.

Its appendix is brimful of information, invaluable in office work, emergency cases, and the daily routine of practice.

It is a reliable friend to consult when, in a perplexing or obstinate case, the usual line of treatment is of no avail. (A hint or a help from the best authorities, as to choice of remedies, correct dosage, and the eligible, elegant, and most palatable mode of exhibition of the same.)

It is compact, elegantly printed and bound, well illustrated, and of convenient size and shape for the pocket.

The alphabetical arrangement of the diseases and a thumb-letter index render reference rapid and easy.

Blank leaves, judiciously distributed throughout the book, afford a place to record and index favorite formulæ.

As a *student*, the physician needs it for study, collateral reading, and for recording the favorite prescriptions of his professors, in lecture and clinic; as a *recent graduate*, he needs it as a reference hand-book for daily use in prescribing (gargles, nasal douches, inhalations, eye-washes, suppositories, incompatibles, poisons, etc.); as an *old practitioner*, he needs it to refresh his memory on old remedies and combinations, and for information concerning newer remedies and more modern approved plans of treatment.

No live, progressive medical man can afford to be without it.

Price, post-paid, in United States and Canada $2.00, net; Great Britain, 11s. 6d.; France, 12 fr. 40.

It is sometimes important that such prescriptions as have been well established in their usefulness be preserved for reference, and this little volume serves such a purpose better than any other we have seen.—*Columbus Medical Journal.*

To the young physiciun just starting out in practice this little book will prove an acceptable companion.—*Omaha Clinic.*

As long as "combinations" are sought, such a book will be of value, especially to those who cannot spare the time required to learn enough of incompatibilities before commencing practice to avoid writing incompatible and dangerous prescriptions. The constant use of such a book by such prescribers would save the pharmacist much anxiety.—*The Druggists' Circular.*

In judicious selection, in accurate nomenclature, in arrangement, and in style, it leaves nothing to be desired. The editor and the publisher are to be congratulated on the production of the very best book of its class.—*Pittsburgh Medical Review.*

Annual of the Universal Medical Sciences.

A Yearly Report of the Progress of the General Sanitary Sciences Throughout the World.

Edited by Charles E. Sajous, M.D., formerly Lecturer on Laryngology and Rhinology in Jefferson Medical College, Philadelphia, etc., and Seventy Associate Editors, assisted by over Two Hundred Corresponding Editors and Collaborators. In Five Royal Octavo Volumes of about 500 pages each, bound in Cloth and Half-Russia, Magnificently Illustrated with Chromo-Lithographs, Engravings, Maps, Charts, and Diagrams. Being intended to enable any physician to possess, at a moderate cost, a complete Contemporary History of Universal Medicine, edited by many of America's ablest teachers, and superior in every detail of print, paper, binding, etc., a befitting continuation of such great works as "Pepper's System of Medicine," "Ashhurst's International Encyclopædia of Surgery," "Buck's Reference Hand-Book of the Medical Sciences."

SOLD ONLY BY SUBSCRIPTION, OR SENT DIRECT ON RECEIPT OF PRICE, SHIPPING EXPENSES PREPAID.

Subscription Price per Year (including the "SATELLITE" for one year): In United States, Cloth, 5 vols., Royal Octavo, $15.00; Half-Russia, 5 vols., Royal Octavo, $20.00. Canada (duty paid), Cloth, $16 50; Half-Russia, $22.00. Great Britain, Cloth, £4 7s.; Half-Russia, £5 15s. France, Cloth, 93 fr. 95; Half-Russia, 124 fr. 35.

The Satellite of the "Annual of the Universal Medical Sciences." A Monthly Review of the most important articles upon the practical branches of Medicine appearing in the medical press at large, edited by the Chief Editor of the Annual and an able staff. Published in connection with the Annual, and for its Subscribers Only.

Editorial Staff of the Annual of the Universal Medical Sciences.

CONTRIBUTORS TO SERIES 1888, 1889, 1890, 1891.

Editor-in-Chief, CHARLES E. SAJOUS, M.D., Philadelphia.

SENIOR ASSOCIATE EDITORS.

Agnew, D. Hayes, M.D., LL.D., Philadelphia, series of 1888, 1889.
Baldy, J. M., M.D., Philadelphia, 1891.
Barton, J. M., A.M., M.D., Philadelphia, 1889, 1890, 1891.
Birdsall, W. R., M.D., New York, 1889, 1890, 1891.
Brown, F. W., M.D., Detroit, 1890, 1891.
Bruen, Edward T., M.D., Philadelphia, 1889.
Brush, Edward N., M.D., Philadelphia, 1889, 1890, 1891.
Cohen, J. Solis, M.D., Philadelphia, 1888, 1889, 1890, 1891.
Conner, P. S., M.D., LL.D., Cincinnati, 1888, 1889, 1890, 1891.
Currier, A. F., A.B., M.D., New York, 1889, 1890, 1891.
Davidson, C. C., M.D., Philadelphia, 1888.
Davis, N. S., A.M., M.D., LL.D., Chicago, 1888, 1889, 1890, 1891.
Delafield, Francis, M.D., New York, 1888.
Delavan, D. Bryson, M.D., New York, 1888, 1889, 1890, 1891.
Draper, F. Winthrop, A.M., M.D., New York, 1888, 1889, 1890, 1891.
Dudley, Edward C., M.D., Chicago, 1888.
Ernst, Harold C., A.M., M.D., Boston, 1889, 1890, 1891.
Forbes, William S., M.D., Philadelphia, 1888, 1889, 1890.
Garretson, J. E., M.D., Philadelphia, 1888, 1889.
Gaston, J. McFadden, M.D., Atlanta, 1890, 1891.
Gihon, Albert L., A.M., M.D., Brooklyn, 1888, 1889, 1890, 1891.
Goodell, William, M.D., Philadelphia, 1888, 1889, 1890.
Gray, Landon Carter, M.D., NewYork, 1890, 1891.
Griffith, J. P. Crozer, M.D., Philadelphia, 1889, 1890, 1891.
Guilford, S. H., D.D.S., Ph.D., Philadelphia, 1888.
Guitéras, John, M.D., Ph.D., Charleston, 1888, 1889.
Hamilton, John B., M.D., LL.D., Washington, 1888, 1889, 1890, 1891.
Hare, Hobart Amory, M.D., B.Sc., Philadelphia, 1888, 1889, 1890, 1891.
Henry, Frederick P., M.D., Philadelphia, 1889, 1890, 1891.
Holland, J. W., M.D., Philadelphia, 1888, 1889.
Holt, L. Emmett, M.D., New York, 1889, 1890, 1891.
Howell, W. H., Ph.D., M.D., Ann Arbor, 1889, 1890, 1891.
Hun, Henry, M.D., Albany, 1889, 1890.
Hooper, Franklin H., M.D., Boston, 1890, 1891.
Ingals, E. Fletcher, A.M., M.D., Chicago, 1889, 1890, 1891.
Jaggard, W. W., A.M., M.D., Chicago, 1890.
Johnston, Christopher, M.D., Baltimore, 1888, 1889.
Johnston, W. W., M.D., Washington, 1888, 1889, 1890, 1891.

SENIOR ASSOCIATE EDITORS (CONTINUED).

Keating, John M., M.D., Philadelphia, 1889.
Kelsey, Charles B., M.D., New York, 1888, 1889, 1890, 1891.
Keyes, Edward L., A.M., M.D., New York, 1888, 1889, 1890, 1891.
Knapp, Philip Coombs, M.D., Boston, 1891.
Laplace, Ernest, A.M., M.D., Philadelphia, 1890, 1891.
Lee, John G., M.D., Philadelphia, 1888.
Leidy, Joseph, M.D., LL.D., Philadelphia, 1888, 1889, 1890, 1891.
Longstreth, Morris, M.D., Philadelphia, 1888, 1889, 1890.
Loomis, Alfred L., M.D., LL.D., New York, 1888, 1889.
Lyman, Henry M., A.M., M.D., Chicago, 1888.
McGuire, Hunter, M.D., LL.D., Richmond, 1888.
Manton, Walter P., M.D., F.R.M.S., Detroit, 1888, 1889, 1890, 1891.
Martin, H. Newell, M.D., M.A., Dr. Sc., F.R.S., Baltimore, 1888, 1889.
Matas, Rudolph, M.D., New Orleans, 1890, 1891.
Mears, J. Ewing, M.D., Philadelphia, 1888, 1889, 1890, 1891.
Mills, Charles K., M.D., Philadelphia, 1888.
Minot, Chas. Sedgwick, M.D., Boston, 1888, 1889, 1890, 1891.
Montgomery, E. E., M.D., Philadelphia, 1891.
Morton, Thos. G., M.D., Philadelphia, 1888, 1889.
Mundé, Paul F., M.D., New York, 1888, 1889, 1890, 1891.
Oliver, Charles A., A.M., M.D., Philadelphia, 1889, 1890, 1891.
Packard, John H., A.M., M.D., Philadelphia, 1888, 1889, 1890, 1891.
Parish, Wm. H., M.D., Philadelphia, 1888, 1889, 1890.
Parvin, Theophilus, M.D., LL.D., Philadelphia, 1888, 1889.
Pierce, C. N., D.D.S., Philadelphia, 1888.
Pepper, William, M.D., LL.D., Philadelphia, 1888.
Ranney, Ambrose L., M.D., New York, 1888, 1889, 1890.
Richardson, W. L., M.D., Boston, 1888, 1889.
Rockwell, A. D., A.M., M.D., New York, 1891.
Rohé, Geo. H., M.D., Baltimore, 1888, 1889, 1890, 1891.
Sajous, Chas. E., M.D., Philadelphia, 1888, 1889, 1890, 1891.
Sayre, Lewis A., M.D., New York, 1890, 1891.
Seguin, E. C., M.D., Providence, 1888, 1889, 1890, 1891.
Senn, Nicholas, M.D., Ph.D., Milwaukee, 1888, 1889.
Shakspeare, E. O., M.D., Philadelphia, 1888.
Shattuck, F. C., M.D., Boston, 1890.
Smith, Allen J., A.M., M.D., Philadelphia, 1890, 1891.
Smith, J. Lewis, M.D., New York, 1888, 1889, 1890, 1891.
Spitzka, E. C., M.D., New York, 1888.
Starr, Louis, M.D., Philadelphia, 1888, 1889, 1890, 1891.
Stimson, Lewis A., M.D., New York, 1888, 1889, 1890, 1891.
Sturgis, F. R., M.D., New York, 1888.
Sudduth, F. X., A.M., M.D., F.R.M.S., Minneapolis, 1888, 1889, 1890, 1891.
Thomson, William, M.D., Philadelphia, 1888.
Thomson, Wm. H., M.D., New York, 1888.
Tiffany, L. McLane, A.M., M.D., Baltimore, 1890, 1891.
Turnbull, Chas. S., M.D., Ph.D., Philadelphia, 1888, 1889, 1890, 1891.
Tyson, James, M.D., Philadelphia, 1888, 1889, 1890.
Van Harlingen, Arthur, M.D., Philadelphia, 1888, 1889, 1890, 1891.
Vander Veer, Albert, M.D., Ph.D., Albany, 1890.
Whittaker, Jas. T., M.D., Cincinnati, 1888, 1889, 1890, 1891.
Whittier, E. N., M.D., Boston, 1890, 1891.
Wilson, James C., A.M., M.D., Philadelphia, 1888, 1889, 1890, 1891.
Wirgman, Chas., M.D., Philadelphia, 1888.
Witherstine, C. Sumner, M.S., M.D., Philadelphia, 1888, 1889, 1890, 1891.
White, J. William, M.D., Philadelphia, 1889, 1890, 1891.
Young, Jas. K., M.D., Philadelphia, 1891.

JUNIOR ASSOCIATE EDITORS.

Baldy, J. M., M.D., Philadelphia, 1890.
Bliss, Arthur Ames, A. M., M.D., Philadelphia, 1890, 1891.
Cattell, H. W., M.D., Philadelphia, 1890, 1891.
Cerna, David, M.D., PhD., Philadelphia, 1891.
Clark, J. Payson, M.D., Boston, 1890, 1891.
Crandall, F. M., M.D., New York, 1891.
Cohen, Solomon Solis, A.M., M.D., Philadelphia, 1890, 1891.
Cryer, H. M., M.D., Philadelphia, 1889.
Deale, Henry B., M.D., Washington, 1891.
Dolley, C. S., M.D., Philadelphia, 1889, 1890, 1891.
Dollinger, Julius, M.D., Philadelphia, 1889.
Dorland, W. A., M.D., Philadelphia, 1891.
Freeman, Leonard, M.D., Cincinnati, 1891.
Goodell, W. Constantine, M.D., Philadelphia, 1888, 1889, 1890.
Gould, Geo. M., M.D., Philadelphia, 1889, 1890.
Greene, E. M., M.D., Boston, 1891.
Griffith, J. P. Crozer, M.D., Philadelphia, 1889.
Hoag, Junius, M.D., Chicago, 1888.
Howell, W. H., PhD., B.A., Baltimore, 1888, 1889.
Hunt, William, M.D., Philadelphia, 1888, 1889.
Jackson, Henry, M.D., Boston, 1891.
Kirk, Edward C., D.D.S., Philadelphia, 1888.
Lloyd, James Hendrie, M.D., Philadelphia, 1888.
McDonald, Willis G., M.D., Albany, 1890.
Penrose, Chas. B., M.D., Philadelphia, 1890.
Powell, W. M., M.D., Philadelphia, 1889, 1890, 1891.
Quimby, Chas. E., M.D., New York, 1889.
Sayre, Reginald H., M.D., New York, 1890, 1891.
Smith, Allen J., A.M., M.D., Philadelphia, 1889, 1890.
Vickery, H. F., M.D., Boston, 1891.
Warfield, Ridgely B., M.D., Baltimore, 1891.
Warner, Frederick M., M.D., New York, 1891.
Weed, Charles L., A.M., M.D., Philadelphia, 1888, 1889.
Wells, Brooks H., M.D., New York, 1888, 1889, 1890, 1891.
Wolff, Lawrence, M.D., Philadelphia, 1890.
Wyman, Walter, A.M., M.D., Washington, 1891.

ASSISTANTS TO ASSOCIATE EDITORS.

Baruch, S., M.D., New York, 1888.
Beatty, Franklin T., M.D., Philadelphia, 1888.
Brown, Dillon, M.D., New York, 1888.
Buechler, A. F., M.D., New York, 1888.
Burr, Chas. W., M.D., Philadelphia, 1891.
Cohen, Solomon Solis, M.D., Philadelphia, 1889.
Cooke, B. G., M.D., New York, 1888.
Coolidge, Algernon, Jr., M.D., Boston, 1890.
Currier, A. F., M.D., New York, 1888.
Daniels, F. H., A.M., M.D., New York, 1888.
Deale, Henry B., M.D., Washington, 1890.
Eshner, A. A., M.D., Philadelphia, 1891.
Gould, George M., M.D., Philadelphia, 1888.
Grandin, Egbert H., M.D., New York, 1888, 1889.
Greene, E. M., M.D., Boston, 1890.
Guitéras, G. M., M.D., Washington, 1890.
Hance, I. H., A.M., M.D., New York, 1891.
Klingenschmidt, C. H. A., M.D., Washington, 1890.
Martin, Edward, M.D., Philadelphia, 1891.
McKee, E. S., M.D., Cincinnati, 1889, 1890, 1891.
Myers, F. H., M.D., New York, 1888.
Packard, F. A., M.D., Philadelphia, 1890.
Pritchard, W. B., M.D., New York, 1891.
Sangree, E. B., A.M., M.D., Philadelphia, 1890.
Sears, G. G., M.D., Boston, 1890.
Shulz, R. C., M.D., New York, 1891.
Souwers, Geo. F., M.D., Philadelphia, 1888.
Taylor, H. L., M.D., Cincinnati, 1889, 1890.
Vansant, Eugene L., M.D., Philadelphia, 1888.

ASSISTANTS TO ASSOCIATE EDITORS—(CONTINUED).

Vickery, H. F., M.D., Boston, 1890.
Warner, F. M., M.D., New York, 1888, 1889, 1890.
Wells, Brooks H., M.D., New York, 1888.
Wendt, E. C., M.D., New York, 1888.
Wilder, W. H., M.D., Cincinnati, 1889.
Wilson, C. Meigs, M.D., Philadelphia, 1889.
Wilson, W. R., M.D., Philadelphia, 1891.

CORRESPONDING STAFF.

EUROPE.

Antal, Dr. Gesa v., Puda-Pesth, Hungary.
Baginsky, Dr. A., Berlin, Germany.
Baratoux, Dr. J., Paris, France.
Barker, Mr. A. E. J., London, England.
Barnes, Dr. Fancourt, London, England.
Bayer, Dr. Carl, Prague, Austria.
Bouchut, Dr. E., Paris, France.
Bourneville, Dr. A., Paris, France.
Bramwell, Dr. Byron, Edinburgh, Scotland.
Carter, Mr. William, Liverpool, England.
Caspari, Dr. G. A., Moscow, Russia.
Chiralt y Selma, Dr. V., Seville, Spain.
Cordes, Dr. A., Geneva, Switzerland.
D'Estrees, Dr. Debout, Contrexéville, France.
Diakonoff, Dr. P. J., Moscow, Russia.
Dobrashian, Dr. G. S., Constantinople, Turkey.
Doléris, Dr. L., Paris, France.
Doutrelepont, Prof., Bonn, Germany.
Doyon, Dr. H., Lyons, France.
Drzewiecki, Dr. Jos., Warsaw, Poland.
Dubois-Reymond, Prof., Berlin, Germany.
Ducrey, Dr. A., Naples, Italy.
Dujardin-Beaumetz, Dr., Paris, France.
Duke, Dr. Alexander, Dublin, Ireland.
Eklund, Dr. F., Stockholm, Sweden.
Fokker, Dr. A. P., Groningen, Holland.
Fort, Dr. J. A., Paris, France.
Fournier, Dr. Henri, Paris, France.
Franks, Dr. Kendal, Dublin, Ireland.
Frémy, Dr. H., Nice, France.
Fry, Dr. George, Dublin, Ireland
Golowina, Dr. A., Varna, Bulgaria.
Gouguenheim, Dr. A., Paris, France.
Haig, Dr. A., London, England.
Hamon, Mr. A., Paris, France.
Harley, Mr. V., London, England.
Harley, Mr. H. R., Nottingham, England.
Harley, Prof. Geo., London, England.
Harpe, Dr. de la, Lausanne, Switzerland.
Hartmann, Prof. Arthur, Berlin, Germany.
Heitzmann, Dr. J., Vienna, Austria.
Helferich, Prof., Greifswald, Germany.
Hewetson, Dr. Bendelack, Leeds, England.
Hoff, Dr. E. M., Copenhagen, Denmark.
Humphreys, Dr. F. Rowland, London, England.
Illingworth, Dr. C. K., Accrington, England.
Jones, Dr. D. M. de Silva, Lisbon, Portugal.
Knott, Dr. J. F., Dublin, Ireland.
Krause, Dr. H., Berlin, Germany.
Landolt, Dr. E., Paris, France.
Levison, Dr. J., Copenhagen, Denmark.
Lutaud, Dr. A., Paris, France.
Mackay, Dr. W. A., Huelva, Spain.
Mackowen, Dr. T. C., Capri, Italy.
Manché, Dr. L., Valetta, Malta.
Massei, Prof. F., Naples, Italy.
Mendez, Prof. R., Barcelona, Spain.
Meyer, Dr. E., Naples, Italy.
Meyer, Prof. W., Copenhagen, Denmark.
Monod, Dr. Charles, Paris, France.
Montefusco, Prof. A., Naples, Italy.
More-Madden, Prof. Thomas, Dublin, Ireland.
Morel, Dr. J., Ghent, Belgium.
Mygind, Dr. Holger, Copenhagen, Denmark.
Mynlieff, Dr. A., Breukelen, Holland.
Napier, Dr. A. D. Leith, London, England.
Nicolich, Dr., Trieste, Austria.
Oberländer, Dr., Dresden, Germany.
Obersteiner, Prof., Vienna, Austria.
Pampoukis, Dr., Athens, Greece.
Pansoni, Dr., Naples, Italy.
Parker, Mr. Rushton, Liverpool, England.
Pel, Prof. P. K., Amsterdam, Holland.
Pippinskjold, Dr., Helsingfors, Finland.
Pulido, Prof. Angel, Madrid, Spain.
Róna, Dr. S., Buda-Pesth, Hungary.
Rosenbusch, Dr. L., Lvov, Galicia.
Rossbach, Prof. M. F., Jena, Germany.
St. Germain, Dr. de, Paris, France.
Sänger, Prof. M., Leipzig, Germany.
Santa, Dr. P. de Pietra, Paris, France.
Schiffers, Prof., Liége, Belgium.
Schmiegelow, Prof. E., Copenhagen, Denmark.
Scott, Dr. G. M., Moscow, Russia.
Simon, Dr. Jules, Paris, France.
Sollier, Dr. P., Paris, France.
Solowieff, Dr. A. N., Lipetz, Russia.
Sota, Prof. R. de la, Seville, Spain.
Sprimont, Dr., Moscow, Russia.
Stockvis, Prof. B. J., Amsterdam, Holland.
Szadek, Dr. Carl, Kiew, Russia.
Tait, Mr. Lawson, Birmingham, England.
Thiriar, Dr., Brussels, Belgium.
Trifiletti, Dr., Naples, Italy.
Tuke, Dr. D. Hack, London, England.
Ulrik, Dr. Axel, Copenhagen, Denmark.
Unverricht, Prof., Jena, Germany.
Van der Mey, Prof. G. H., Amsterdam, Holland.
Van Leent, Dr. F., Amsterdam, Holland.
Van Millingen, Prof. E., Constantinople, Turkey.
Van Rijnberk, Dr., Amsterdam, Holland.
Wilson, Dr. George, Leamington, England.
Wolfenden, Dr. Norris, London, England.
Zweifel, Prof., Leipzig, Germany.

AMERICA AND WEST INDIES.

Bittencourt, Dr. J. C., Rio Janeiro, Brazil.
Cooper, Dr. Austin N., Buenos Ayres, Argentine Republic.
Dagnino, Prof. Manuel, Caracas, Venezuela.
Desvernine, Dr. C. M., Havana, Cuba.
Fernandez, Dr. J. L., Havana, Cuba.
Finlay, Dr. Charles, Havana, Cuba.
Fontecha, Prof. R., Tegucigalpa, Honduras.
Harvey, Dr. Eldon, Hamilton, Bermuda.
Herdocia, Dr. E. Leon, Nicaragua.
Levi, Dr. Joseph, Colon, U. S. Columbia.
Mello. Dr. Vierra de, Rio Janeiro, Brazil.
Moir, Dr. J. W., Belize, British Honduras.
Moncorvo, Prof., Rio Janeiro, Brazil.
Plà, Dr. E. F., Havana, Cuba.
Rake, Dr. Beaven, Trinidad.
Rincon, Dr. F., Maracaibo, Venezuela.
Semeleder, Dr. F., Mexico, Mexico.
Soriano, Dr. M. S., Mexico, Mexico.
Strachan, Dr. Henry, Kingston, Jamaica.

OCEANICA, AFRICA, AND ASIA.

Baelz, Prof. R., Tokyo, Japan.
Barrett, Dr. Jas. W., Melbourne, Australia.
Branfoot, Dr. A. M., Madras, India.
Carageorgiades, Dr. J. G., Limassol, Cyprus.
Cochran, Dr. Joseph P., Oroomiah, Persia.
Coltman, Dr. Robert, Jr., Che-foo, China.
Condict, Dr. Alice W., Bombay, India.
Creece, Dr. John M., Sydney, Australia.
Dalzell, Dr. J., Umsiga, Natal.
Diamantopulos, Dr. Geo., Smyrna, Turkey.
Drake-Brockman, Dr., Madras, India.
Fitzgerald, Mr. T. N., Melbourne, Australia.
Foreman, Dr. L., Sydney, Australia.
Gaidzagian, Dr. Ohan, Adana, Asia Minor.
Grant, Dr. David, Melbourne, Australia.
Johnson, Dr. R., Dera Ishmail Khan, Beloochistan.
Kimura, Prof. J. K., Tokyo, Japan.
Knaggs, Dr. S., Sydney, Australia.
Manasseh, Dr. Beshara I., Brummana, Turkey in Asia.
McCandless, Dr. H. H. Hainan, China.
Moloney, Dr. J., Melbourne, Australia.
Neve, Dr. Arthur, Bombay, India.
Perez, Dr. George V., Puerto Orotava, Teneriffe.
Reid, Dr. John, Melbourne, Australia.
Robertson, Dr. W. S., Port Said, Egypt.
Rouvier, Prof. Jules, Beyrouth, Syria.
Scranton, Dr. William B., Seoul, Corea.
Sinclair, Dr. H., Sydney, Australia.
Thompson, Dr. James B., Petchaburee, Siam.
Wheeler, Dr. P. d'E., Jerusalem, Palestine.
Whitney, Dr. H. T., Foochow, China.
Whitney, Dr. W. Norton, Tokyo, Japan.

RANNEY

Lectures on Nervous Diseases.

FROM THE STAND-POINT OF CEREBRAL AND SPINAL LOCALIZATION, AND THE LATER METHODS EMPLOYED IN THE DIAGNOSIS AND TREATMENT OF THESE AFFECTIONS.

By AMBROSE L. RANNEY, A.M., M.D., Professor of the Anatomy and Physiology of the Nervous System in the New York Post-Graduate Medical School and Hospital; Professor of Nervous and Mental Diseases in the Medical Department of the University of Vermont, etc.; Author of "The Applied Anatomy of the Nervous System," "Practical Medical Anatomy," etc., etc.

It is now generally conceded that the nervous system controls all of the physical functions to a greater or less extent, and also that most of the symptoms encountered at the bedside can be explained and interpreted from the stand-point of nervous physiology.

Profusely illustrated with original diagrams and sketches in color by the author, carefully selected wood-engravings, and reproduced photographs of typical cases. One handsome royal octavo volume of 780 pages.

SOLD ONLY BY SUBSCRIPTION, OR SENT DIRECT ON RECEIPT OF PRICE, SHIPPING EXPENSES PREPAID.

Price, in United States, Cloth, $5.50; Sheep, $6.50; Half-Russia, $7.00. Canada (duty paid), Cloth, $6.05; Sheep, $7.15; Half-Russia, $7.70. Great Britain, Cloth, 32s.; Sheep, 37s. 6d.; Half-Russia, 40s. France, Cloth, 34 fr. 70; Sheep, 40 fr. 45; Half-Russia, 43 fr. 30.

We are glad to note that Dr. Ranney has published in book form his admirable lectures on nervous diseases. His book contains over seven hundred large pages, and is profusely illustrated with original diagrams and sketches in colors, and with many carefully selected wood-cuts and reproduced photographs of typical cases. A large amount of valuable information, not a little of which has but recently appeared in medical literature, is presented in compact form, and thus made easily accessible. In our opinion, Dr. Ranney's book ought to meet with a cordial reception at the hands of the medical profession, for, even though the author's views may be sometimes open to question, it cannot be disputed that his work bears evidence of scientific method and honest opinion.—*American Journal of Insanity.*

STANTON'S

Practical and Scientific Physiognomy;

OR

How to Read Faces.

By MARY OLMSTED STANTON. Copiously illustrated. Two large Octavo volumes.

The author, MRS. MARY O. STANTON, has given over twenty years to the preparation of this work. Her style is easy, and, by her happy method of illustration of every point, the book reads like a novel and memorizes itself. To physicians the diagnostic information conveyed is invaluable. To the general reader each page opens a new train of ideas. (This book has no reference whatever to phrenology.)

SOLD ONLY BY SUBSCRIPTION, OR SENT DIRECT ON RECEIPT OF PRICE, SHIPPING EXPENSES PREPAID.

Price, in United States, Cloth, $9.00; Sheep, $11.00; Half-Russia, $13.00. Canada (duty paid), Cloth, $10.00; Sheep, $12.10; Half-Russia, $14.30. Great Britain, Cloth, 56s.; Sheep, 68s.; Half-Russia, 80s. France, Cloth, 30 fr. 30; Sheep, 36 fr. 40; Half-Russia, 43 fr. 30.

SAJOUS

Lectures on the Diseases of the Nose and Throat.

DELIVERED AT THE JEFFERSON MEDICAL COLLEGE, PHILADELPHIA.

By CHARLES E. SAJOUS, M.D. Formerly Lecturer on Rhinology and Laryngology in Jefferson Medical College; Vice-President of the American Laryngological Association; Officer of the Academy of France and of Public Instruction of Venezuela; Corresponding Member of the Royal Society of Belgium, of the Medical Society of Warsaw (Poland), and of the Society of Hygiene of France; Member of the American Philosophical Society, etc., etc.

☞ *Since the publisher brought this valuable work before the profession, it has become: 1st, the text-book of a large number of colleges; 2d, the reference-book of the U. S. Army, Navy, and the Marine Service; and, 3d, an important and valued addition to the libraries of over 10,000 physicians.*

This book has not only the inherent merit of presenting a clear *exposé* of the subject, but it is written with a view to enable the general practitioner to treat his cases himself. To facilitate diagnosis, *colored plates* are introduced, showing the appearance of the different parts in the diseased state as they appear in nature by artificial light. No error can thus be made, as each affection of the nose and throat has its representative in the *100 chromo-lithographs* presented. In the matter of treatment, the indications are so complete that even the slightest procedures, folding of cotton for the forceps, the use of the probe, etc., are clearly explained.

Illustrated with 100 chromo-lithographs, from oil paintings by the author, and 93 engravings on wood. One handsome royal octavo volume.

SOLD ONLY BY SUBSCRIPTION, OR SENT DIRECT ON RECEIPT OF PRICE, SHIPPING EXPENSES PREPAID.

Price, in United States, Cloth, Royal Octavo, $4.00; Half-Russia, Royal Octavo, $5.00. Canada (duty paid), Cloth, $4.40; Half-Russia, $5.50. Great Britain, Cloth, 22s. 6d.; Sheep or Half-Russia, 28s. France, Cloth, 24 fr. 60; Half-Russia, 30 fr. 30.

It is intended to furnish the general practitioner not only with a guide for the treatment of diseases of the nose and throat, but also to place before him a representatien of the normal and diseased parts as they would appear to him were they seen in the living subject. As a guide to the treatment of the nose and throat, we can cordially recommend this work. —*Boston Medical and Surgical Journal.*

IN PRESS.

THE CHINESE: Their Present and Future; Medical, Political, and Social.

By ROBERT COLTMAN, JR., M.D, Surgeon in Charge of the Presbyterian Hospital and Dispensary at Teng Chow Fu; Consulting Physician of the American Southern Baptist Mission Society; Examiner in Surgery and Diseases of the Eye for the Shantung Medical Class; Consulting Physician to the English Baptist Missions, etc. Illustrated with about Sixteen Fine Engravings from photographs of persons, places, and objects characteristic of China. In one Octavo volume of about 250 pages. READY ABOUT DECEMBER 1, 1891.

The author has spent many years among the Chinese; LIVED with them in their dwellings; THOROUGHLY learned the language; has become conversant with all their strange and odd characteristics to a greater extent than almost any other American. He has been a physician to all classes of this wonderful people, and the opportunities thus afforded for a clear insight into the inner life of the Chinese, their virtues and vices, political, social, and sanitary condition, probale destiny, and their present important position in the world to-day, have been ably and wisely used by Dr. Coltman.

Nearly Ready. Will be Issued about October 1, 1891.

Age of the Domestic Animals.

BEING A COMPLETE TREATISE ON THE DENTITION OF THE HORSE, OX, SHEEP, HOG, AND DOG, AND ON THE VARIOUS OTHER MEANS OF TELLING THE AGE OF THESE ANIMALS.

By RUSH SHIPPEN HUIDEKOPER, M.D., Veterinarian, Alfort, France. Professor of Sanitary Medicine and Veterinary Jurisprudence in the American Veterinary College, New York; Lieutenant-Colonel and Surgeon-in-Chief National Guard of Pennsylvania; Fellow of the College of Physicians, Philadelphia; Honorary Fellow of the Royal College Veterinary Surgeons, London; Late Dean of the Veterinary Department University of Pennsylvania, etc., etc.

Complete in one handsome Royal Octavo volume, with about 160 Illustrations. This is one of the most important works on the domestic animals published in recent years.

Ready Very Shortly.

A, B, C of the Swedish System of Educational Gymnastics.

A PRACTICAL HAND-BOOK FOR SCHOOL-TEACHERS AND THE HOME.

By HARTVIG NISSEN. Instructor of Physical Training in the Public Schools of Boston, Mass.; Instructor of Swedish and German Gymnastics at Harvard University's Summer School, 1891; Author of "A Manual on Swedish Movement and Massage Treatment," etc., etc.

Complete in one neat 12mo volume, bound in extra flexible cloth and appropriately illustrated with 77 excellent engravings aptly elucidating the text.

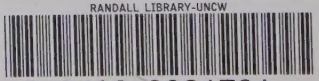
Lectures on Auto-Intoxication.

By PROF. BOUCHARD, Paris. Translated from the French, with an Original Appendix by the author. By THOMAS OLIVER, M.D., Professor of Physiology in University of Durham, England. IN PRESS.

DATE DUE

GAYLORD			PRINTED IN U.S.A

RANDALL LIBRARY-UNCW



3 0490 0031791 .

F867
.R4

F867
.R4

Remondino
The Mediterranean
shores of America.
Southern California

DATE	ISSUED TO

HECKMAN
BINDERY INC
AU
N. M
IND